

# ECHO IRELAND

IRISH RADIO TRANSMITTERS SOCIETY

Summer 2017 - 85 YEARS



At the EI7DAR Clubhouse - Jim EI8GS, Dave EI9FBB, Dave EI4BZ



Also at EI7DAR - Mark EI6HPB, Jim EI2HJB, Jim EI3HCB



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Pat O'Connor EI9HX



# News from around the Clubs

## Dundalk Amateur Radio Society

### Brian Whelan EI8EJB

The Annual General Meeting of Dundalk Amateur Radio Society took place on Wednesday May 3rd 2017

The following were elected as the committee for the forthcoming year:

Chairman: Brian Whelan EI8EJB  
Secretary: Hugh Bradley EI9KF  
Treasurer: Jim Daly EI2HJB  
PRO: Tony Allen EI4DIB  
QSL Manager: Sean Kennedy EI4IP  
DARS/IRTS Representative: Thos Caffrey EI2JD  
Club Caretaker: Damien Walsh MI6KUB

The Dundalk Amateur Radio Society is looking forward to the new club year and hopes to include many new radio-based activities, including a station re-vamp, taking part in the various contests and having some topical talks over the coming months. New members and visitors are always welcome to the club which meets on the 1st and 3rd Wednesday of every month. Details at [ei7dar.com](http://ei7dar.com)



*Brian EI8EJB and Adrian EI2KJ operating EI0W/P on Faughart Hill, during the IRTS 70cms/2m counties contest*

## Cork Radio Club

### Dave Moore EI4BZ

A well attended Annual General Meeting of Cork Radio Club was held recently and the following were elected to lead the club for the coming year.

Chairman: Jerry Cahill EI6BT  
Vice Chairman: Denis Long EI5GSB  
Secretary: Laura Wilkins SWL  
Treasurer: Jim Barry EI8GS  
QSL & Awards Manager: Tim McKnight EI2KA  
IRTS Representative: Dave Moore EI4BZ  
Committee Members: Dave Deane EI9FBB,  
Sean Cowman EI3GS, Dave Moore EI4BZ

The club meets at Carrigtwohill Community Centre on the second Wednesday each month and new members are very welcome. Enquiries to Dave EI4BZ on 087-6290574 or [davebeag@gmail.com](mailto:davebeag@gmail.com).

## Summits On The Air (SOTA)

Our December 2016 issue carried an article by Phil Rogister ON4TA about his experiments on the 23cms band, and included reference to Phil's first-ever QSO on 23cms across the Irish Sea in July 2016, during the VHF/UHF Field Day contest. Phil returned to Ireland in April 2017, aiming for summit-to-summit QSOs on 23cms as well as operating on other HF and VHF bands.

We hope to have a full report of his 2017 adventures on Irish summits in a forthcoming issue. We can report, however, that his target of achieving summit-to-summit QSOs on 23cms was met early in April, when he had three successful QSOs with Welsh summits on 23 cms from Tonlague, County Wicklow. The photo shows Phil on Tonlague with his home-constructed 23cms beam.



## Shannon Basin Radio Club

### Brian Canning EI8IU

The Shannon Basin Radio Club held a recent meeting at Pat EI9HX QTH on 22nd April which was also attended by Gerry Gervin EI8CC, President of IRTS.

During the meeting several topics were discussed including the clubs upcoming contest activities, theory classes, antenna issues and logging / data software.

Pat EI9HX and Enda also gave a talk on their recent DXpedition to Nepal with 9N7EI.

Gerry EI8CC also gave a talk on general topics concerning today's amateur radio operator after which he took the mic and operated as EI22WAW and immediately had a pile up.

Refreshments were served, thanks to Patricia (EI9HX XYL).

The club would like to sincerely thank Gerry EI8CC for taking the time to attend the meeting which was thoroughly enjoyed by all in attendance.

We will be running theory classes towards the end of the summer; venue and dates will be announced shortly and will also be on [www.shannonbasinradioclub.com](http://www.shannonbasinradioclub.com). Anybody wishing to take part in these classes, please contact Pat EI9HX or Brian EI8IU.

Keep an ear out for club members using the WAW callsigns and give them a call.



*Gerry EI8CC with Pat EI9HX*



*Gerry EI8CC presenting Pat EI9HX with the Lough Allen Shield awarded to the leading entrant in the SSB Fixed section of the Winter 80m IRTS Counties Contest*



*L to R. Fr. Niall EI4CF, Gerry EI8CC, Pat EI9HX, Brian EI8IU, Owen EI4GGB (and vy YL!) Stewart (SWL), Enda EI2II, Anthony EI6GGB.*

## Operating WAW - Alan Cronin EI8EM

Every operator has a particular interest - long conversations on air, brief contacts, chasing DX, contesting, equipment building, CW, digital, the list goes on. Take chasing DX and contesting. Trying to get through a pileup to get DX is a skill learned over time. The same for contesting - it takes a great deal of concentration to keep the QSOs coming in. This is where operating special calls can help. Being on the other side of a pileup takes a bit of getting used to, but it can be very satisfying to be the one in control and you learn a lot when you listen to the techniques stations use to be the one you hear (the good and the bad). Which is where special calls come in to the picture. The WAW project that runs to the end of this year can give you the opportunity to try your hand. There are nine calls available to any EI licensed operator anywhere in the 26 counties, and these calls are eagerly sought by operators all over the world. So far over 50,000

QSOs have been made using these calls and the demand to work them is increasing as operators try for the "Worked all 9" certificate, plus the general awareness increases as operators work one call, check it on QRZ.com and find there are eight others to work.

There are already a group of about 30 EI operators who regularly use the calls. Most just do it for the fun, operating a special call for a day when they feel like having go. But the WAW group can do with more operators - you will regularly see notes on the clusters with comments like "where is EI44 today?", "when will EI55 be on 40m SSB?".

If you would like to have a go, have a look at the IRTS website. Full details are there on how to get the go-ahead to put one of these calls on air. Or you can send an mail to [waw@irts.ie](mailto:waw@irts.ie) giving your call and any preference you might have for county, band or mode. You can pick the call you would like to use, or the county you would like to support.





## IARU Region 1 Meeting

### Dave Court EI3IO

The Executive Committee of (EC) IARU-Region 1 (IARU-R1) met over the weekend of 5th to 7th May. The EC is responsible for managing the business of Region 1 between the triennial meetings of the General Conference (GC) and currently meets annually. Dave Court EI3IO was elected to the EC at the last GC and Séamus McCague EI8BP was present as the acting Chairman of the Political Relations Committee.

On this occasion the objectives and finances of IARU-R1 were examined by the EC in detail with a view to implementing cost saving measures through focussing activities on the core business of IARU-R1, viz., radio spectrum acquisition, retention, and consolidation and responding to the general threat of increasing levels of man-made noise especially at HF, MF and LF frequencies.

In addition, IARU recognises the importance of facilitating the longevity of amateur radio by stimulating young persons' interest in our hobby. Some progress was made but in-depth discussions and difficult decisions will no doubt take place at the GC in Germany this coming September.

The GC comprises 7 Committees, C1 is the Steering Committee, C2 is the Credentials and Finance Committee, C3 is the General Administrative and Organisational Committee, C4 is the Permanent HF Committee, C5 is the Permanent VHF/UHF and Microwaves Committee, C6 is the Election and Ballot Committee and C7 is the Permanent EMC Committee.

Committee C5 has a significant number of documents to consider many of which relate to contest matters. The conference documents can be downloaded from [www.iaru-r1.org/index.php/general-conference/landshut-2017](http://www.iaru-r1.org/index.php/general-conference/landshut-2017). Amateur licensees in Ireland are encouraged to study the documents and to provide any comments they may have by email to the IRTS President *Gerry EI8CC*

The IRTS delegation to the GC will comprise two persons with the President, Gerry Gervin, EI8CC as Head of

Delegation. Dave EI3IO will be present as a current EC member and will again be standing for election for a second term in the EC. Similarly Séamus, EI8BP will be reporting to the GC as acting PRC Chairman and is a candidate to be the regular Chairman in future.

The EC was also briefed on IARU preparations for WRC-19. There are three priority items. The first is agenda item 1.1 which invites the WRC to consider the allocation of the band 50 – 54 MHz to the amateur service in Region 1, similar to allocations already in place for Regions 2 and 3 and a number of African countries in Region 1. To date all 6m frequency allocations in Europe and the Middle East in 50 – 52 MHz have been made by virtue of an ITU regulatory provision which states that administrations may assign frequencies to stations subject to not causing interference to services having a formal allocation in the band. In this regard IARU has submitted contributions WRC preparatory discussions in Region1 Regional Telecommunications Organisations (RTOs) including CEPT and ITU. These contributions justify spectrum requirements and address sharing with legacy analogue television broadcasting services and land-mobile services.

Another priority agenda item (1.13) concerns the quest by industry and regulators to find spectrum for 5G broadband mobile systems. There is a possibility that the amateur service could be adversely affected in the 24 GHz, 47 GHz and 84 GHz bands. Again inputs have been made to RTOs stressing the need to protect the primary amateur service at 24 and 47 GHz.

The third priority item (9.1.6) deals with proposals by the automotive industry to find spectrum for Wireless Power Transfer (WPT) where the batteries of electrically powered vehicles would be charged using high power wireless transmitters. Although frequencies may be in the vicinity of 90 kHz IARU and a number of other spectrum users are concerned about the possibility of increased noise levels from out-of-band emissions.



*Ranko 4O3A (EC), Ivan OZ7IS (EC), Torre LA9QL (EMC), Dave EI3IO (EC) Don G3BJ (President), Séamus EI8BP (PRC), Jacques ON4AVJ (VHF), Colin G3PSM (ERC), Thilo DL9KCE (EC), Ole LA2RR (IARU V-P) Faisal K2RR (Vice President), Eva HB9FPM (Treasurer), Lisa PA2LS (Youth), Dennis ZS4BS (Secretary), Uli DK4VW (HF), Oliver Z32TO*

*Photo: Andreas HB9JOE Financial Consultant*



# HF Happenings

## Mark Bannon EI6HPB

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Greetings and a very warm welcome again to HF Happenings. You will no doubt notice that a change of face, name and callsign has occurred in terms of the author of this column.

It is my wish to take this opportunity to thank and pay proper tribute to Anthony for the phenomenal amount of work which he did over the past six years. When each publication of Echo Ireland came through the letter box, I always enjoyed having a good read about his adventures on the airwaves. You could see his continual passion for amateur radio shine through within ever sentence and paragraph.

Being well aware that he will be most likely reading this article himself, I shall add this next statement for his personal attention: "You could say he was a true Shakespeare of the ham world.... Oh dear, what have I done to myself in terms of accepting this role? These are certainly big shoes which I need to now try and fill".

As I cast my mind back over the years I recall hearing and seeing the callsign EI2KC constantly appearing almost everywhere I went. What do I mean by this? Well, of course Anthony was not just of course in Echo Ireland. While keenly listening on the waves as an SWL there was no doubt that you would hear Anthony at least once or twice working a few pileups. Even while surfing around online you couldn't avoid Anthony's ham influence or presence. In fact indirectly he was one of the hams I would say encouraged me to finally sit

the licence examination. There was something truly special and fascinating about the way in which he has continually presented the hobby. It was while watching a video of one of his QSOs on YouTube that I decided to finally go forward and get my own callsign so that I could talk to other countries around the globe.

In summary, on behalf of all of the Echo Ireland readership, I would like to say a big thank you for the dedication which you put into promoting the hobby and for providing us with such wonderful feedback regarding what was happening on the high frequency waves during these past few years. It is certainly not an easy task to produce these articles (as I am about to discover myself) but you did it exceptionally well.

At this point I should point out that up until now I have not been focusing on contests as much as the previous author, although it is certainly something I would love to now focus a bit more on as a result of this role.

I guess being a relatively newly licensed amateur I have so far been trying to just chase the occasional rare or interesting stations, and of course do a good bit of DX ragchew.

That's one of the most special things about amateur radio as a hobby, in particular HF. Namely that everyone can find different aspects of it to interest them. Even the variety of modes on offer gives great delight for all operators: CW, Voice, PSK, RTTY etc.

Perhaps it is hard for me to believe at this point that I am not that long transmitting on HF myself. It feels like I have been doing it for a mini-lifetime (and still love every second of it).

When I received my licence in the post back in 2015 and finally had it in my hands, I was thrilled. Straight away, I purchased a number of radios of course but within days I was registering myself for services such as EchoLink in order to try and explore being able to talk abroad to far away lands and explore the world in that way too. In other words I was keen to try my hand at everything that the ham world had to offer.

Some people take a long time to decide if they should get a HF radio due to various factors. Luckily in my case I already had the outside infrastructure present (antennas and coax) due to years of SWL'ing, but the transceiver was what I needed now if I was to truly use my licence to its fullest. Once that first transceiver arrived I did more listening on it than anything.

So fast forward to the 17<sup>th</sup> January 2016. For the very first time I decided to make a CQ call on HF. You can only imagine my surprise when I heard someone reply to me on my first attempt using very low watts. CS8ABF approximately 1300 miles away in the Azores Islands on 20m. After a lovely chat and an RS received of 58, I was well and truly hooked from that moment on. Since then of course I have not looked back and as you can imagine CS8ABF is no longer a stranger to my logs at this point.



*The Author's Shack*



## Recent HF Activity

Most of us would agree that propagation conditions have not been exactly excellent as of late. That certainly shouldn't stop us from making some nice contacts if we are patient. The challenges of poor propagation make things exciting in its own way. Yes I would agree we could do with the occasional improvement in solar activity, although even so it is still possible to have good DX QSO on the worst of days.

### DC500LS

Not sure why this grabbed my attention so much but when I came across it I decided it would be worth chasing and did everything in my power to ensure I got to work them. There was a significant amount of pileup, although I managed to make contact in the end. This special event station is dedicated to 500 years of reformation in Schmalkalden. Their QTH is a charming and picturesque town located on the southern slope of the Thuringian Forest within Germany at nearly 1000 ft in altitude. They plan to operate up until the 31<sup>st</sup> December on all HF bands. Modes of use include CW, SSB, FM, PSK and RTTY. Perhaps a station worth getting into your logs before the end of the year on some or all of these modes?

### YU7AOP

Zrenjanin Radio Klub has about 40 members in it. Using 45W I decided to try and make contact with them in April. Worked them very easily for a good few minutes. Their club is trying to encourage local youth into the hobby, specifically school children and I wish them the very best of luck in this endeavour.

### SX20MDC

Another contest I decided to take part in was the one organised to celebrate the 20<sup>th</sup> Anniversary of the Mediterraneo DX Club. It proved very successful for them and gained over 18,000 QSOs as a result, all of which were submitted to LoTW.

### RT3F

The Yuri Gagarin Cosmonaut Training Centre Club Station using 50W on 7.122MHz with crystal clarity of signal. Yet again it involved quite a bit of an uphill struggle getting through the pileup although persistence paid off. Was very glad to finally get to make contact with this club station, had been looking at it for ages wondering when would I get a chance. There is always a sense of satisfaction when you manage to finally get to put a particular callsign in your logs.

Certainly its not uncommon to make contact with Canadian or US stations on 20m or 40m. The phrase been there and done that comes to mind for most of us. During poor conditions though it can be a different story and can result in a story worth talking about. While tuning around the 17m band I encountered a ham in New York. No one was replying to him so I decided I might as well give it a try and see if I could establish contact. It was only meant to be a standard exchange of callsigns, RST report and a 73 at the end. We decided because things were so quiet that evening to actually sit down with a cup of tea and have a chat. The conditions were the best I have seen in a long time. In fact they were so good that it was as if were in the same room as each other. No QSB or QRM, everything literally sounded like we were chatting across a table. So we decided to see how long the



conditions would last, expecting perhaps any moment now it would break down and that would be it. An hour passed and conditions were excellent still on 17m. Total shock for both of us. We spoke about his family originally being from Ireland and generally about his other hobbies and interests over there in the states. Eventually before we knew it an enjoyable rare extremely long ragchew had developed of what could only be described as crystal clear near 59+10 quality signals throughout. Ok at that point we realised that this was a weird situation that propagation had remained so perfect for this length of time. Finally just after that it started to break up and we said our 73. It just reminds me that 17m was a band I hadn't really been checking that much all of late, but it is worth tuning around and seeing if conditions are favourable on it and various other bands if your not normally used to checking them.

Not all of my CQ calls are aimed at very long distance contacts, sometimes a relatively medium distance contact can bring good enjoyment too as was the case with Andrea below.

### TKF4CJY/MM and IS0DCR

Since like most people I too can feel a little lazy and not want to travel on a flight to other countries in Europe to experience new cultures every week, sometimes the radio can prove useful for this purpose. Its an added bonus when you encounter some nice friendly operators such as Arno and Ivan in Corsica and Sardinia respectively. Arno explained that he was from the city of Ajaccio on the west coast of Corsica.

Apart from being the capital city of Corsica, Ajaccio also is famous for another reason, the birth of Napoleon Bonaparte in 1769. In fact his home located on Rue Saint-Charles is of course a museum dedicated to him.

### 9H1TT

Had a wonderful QSO with Andrea from Malta, 21<sup>st</sup> February, on 40m. I recall that conditions at that moment were decent, significant fading although at points but was able to maintain a good contact with him and many others during that week.

### ON4CRD/P

I had heard of this award a little bit late, in fact on its second last day of activation. Run by Club Radio Darnal Belgium, its full title was "Award of Exceptional Caves of the Province of Namur". The rules were simple. All you had to do was work their portable station three times using either CW or SSB. They were operating on 80m, 40m and 20m. Unfortunately I did miss out on obtaining a certificate for this, but it was a good little contest and I am glad I managed to get in on some of the action near the end.

### SV3AQR

This particular QSO with John took place on 18.160MHz at low power, resulting in a genuine 59 on both sides. It is difficult to ask for better than that when your lucky enough for it to happen in current propagation conditions. Yet again 17m seemed to be working its magic quite well for me. I look forward to working John again further down the log on this band in the future.

### 9N7EI

I guess this is the only station in this article so far which I didn't unfortunately get to work, although naturally I am extremely eager to make a special mention of the groups success with it in this edition of HF Happenings. I'm aware that I have managed to congratulate some of you already in person regarding your DXpedition to Nepal, although I wish to formally here congratulate you as a whole group on your successes with the venture which ran from the 8<sup>th</sup>-20<sup>th</sup> March.

It is extremely safe to say that most of us would have loved to have been there with you, in person not just in spirit, at Kathmandu. The views from that QTH at 6000 ft above sea level must have been truly spectacular to say the least. On saying that I am 100% certain that the views were only a fractional part of your overall excitement. Of course I can only imagine how happy you were when you realised you had worked 30,357 QSOs and of course your 108 DXCCs. Looking forward to hearing of the next EI0DXG adventure.

## Upcoming DX

### DL2017TDF

Germany Dusseldorf: One for your ham calendar. Celebrating the Tour de France. Operations will be between 1<sup>st</sup> May and 31<sup>st</sup> July. QSL are via bureau.

### F4AHN, F4HLE and F5INJ

The French astronaut Thomas Pesquet, who is currently aboard the International Space Station is to be honoured on the ham bands until June 3; QSL is via F5INJ.



### 8J7FESTA

Special event station 8J7FESTA will be operating around the Tohoku Festival in Japan from now until August 31. All QSL will be via bureau.

### MM0GOR

Unfortunately the Isle of Man operations which Gordon was going to be involved in for the RSGB IOTA Contest has had to be cancelled. No further news relating to this as of yet.

### 3Y0Z

One I would certainly love to personally work is the Bouvet Island DXpedition. We have plenty of advance notice on this particular event. It will not be taking place until January to February 2018. We will talk more about this in a later edition.

### FP/DH5FS, FP/DK2AB, FP/G3ZAY, FP/G7VJR, FP/M0BLF and FP/M0WUT.

Cambridge University Wireless Society members will be active from the St. Pierre and Miquelon Islands between 13<sup>th</sup> and 23<sup>rd</sup> September. Operating on various HF bands and modes. Information will be posted on QRZ.com later for QSL info. Club Log or LoTW will be used by most operators.

### ZL2DX and ZL2QT

Chatham Islands: Chris and his XYL Catherine will be operating a station well worth QSO'ing with if you get a chance. They are going to operate it from late May all the way onwards for the next three years. QSL via direct communication.

To all readers of HF Happenings, both licensed amateurs and SWL alike, I say 73 for now. Looking forward to hearing of all your successes listening and/or transmitting on the HF bands. If you wish to submit in my direction any ideas, comments, suggestions or even potential small paragraphs of content you would like me to try and incorporate in some way into the next edition of HF Happenings, please do not hesitate to do so to [radio@paddyproject.com](mailto:radio@paddyproject.com)

*Go raibh maith agaibh agus slán go fóill*  
Mark EI6HPB

## Echo Ireland September 2017

Copy deadline - 15th August  
Articles to [newsteam@irts.ie](mailto:newsteam@irts.ie)





## Getting Started with Digital Radio - Part 2

### Steve Wright EI5DD

Digital communication modes have gained popularity over the years in the market because of superior performance in environments with interference, noise and other contributing factors that degrade the quality of a standard FM analogue signal. Narrower bandwidth and the need for increased spectrum have led to the development of digital communications technology, which has been widely adopted in the public safety and private business sectors that use two-way radio technology.

In 2013, Yaesu introduced their innovative System Fusion which quickly found its niche in the amateur market. The popularity of System Fusion continues to grow as a result of the quality, reliability and enhanced performance of this mode. Unlike its counterparts, it is “amateur” friendly and steers away from considerations that make the commercial solutions more difficult and less appealing.

Like it or hate it, digital voice communications are the new era for amateur radio. The facilities around this mode, such as Wires-X, offer new and exciting operating experiences. This, coupled with the transmission of data superimposed on the voice signal, allows GPS data to update the position and distance of the received station on the screen of the recipient’s transceiver. The introduction of C4FM / FDMA technology is the beginning of a new digital communication system in amateur radio world. The most attractive advantage of digital communication is the ability to transfer large amounts of data.

The 12.5 kHz channel spacing in using the C4FM FDMA digital modulation mode allows high-speed data communication with reliable voice communication and strong error-correction performance. C4FM FDMA offers a 9.6 kbps data transfer rate speed. It differs significantly from existing digital radio systems and expands the possibilities for interesting amateur radio activities in the future.

Yaesu Fusion uses C4FM (Constant envelope Four Level Frequency Modulation) as its modulation system and is used in conjunction with FDMA (Frequency Division Multiple Access). In fact, this is the same mode used in P25 Phase 1 which is used by emergency responders in some countries. It is, however, not compatible.

The FM envelope uses 12.5 kHz bandwidth (Narrow FM) and uses a similar DVSI AMBE DSP chip to that used in DMR and P25 but newer than that used in D-Star.

#### Yaesu Fusion Modes

The C4FM / FDMA technology provides three digital modes and an analogue mode (FM)



V/D mode (Voice/Data simultaneous communications mode) has two sub-modes depending on volume of data and allows simultaneous voice and data communication. The voice signal is transmitted in one half of the bandwidth 6.25 kHz. Simultaneously the other 6.25 kHz is used for error correction of the voice signal and other data.

Examples of data sent would be GPS location, text messages or pictures

Voice Full Rate (VW)

4400bps for voice, 2800bps for voice FEC

Data Full Rate (DW) supports 7200bps, (No FEC)

By incorporating powerful error-correction codes, there are fewer interruptions to conversations. The standard FDMA digital mode provides an ideal balance of error correction and sound quality with digital clear voice technology developed for C4FM digital.

#### C4FM Framing Details

Header (HC) 960 bits 100ms	Communication(CC) 960 bits 100ms	5 Frames max	Communication(CC) 960 bits 100ms	Terminator (TC) 960 bits 100ms
----------------------------------	----------------------------------------	--------------------	----------------------------------------	--------------------------------------

A Typical C4FM Frame		
Dibit	Symbol	Frequency Deviation
01	+1	+900hz
01	+3	+2700hz
10	-1	-900hz
11	-3	-2700hz

Raw Rate: 9,600 bps

Payload after framing 7,200 bps

AMBE Voice:

100ms voice compressed to 20ms of data

#### Voice FR mode (Voice Full Rate)

This mode uses the full 12.5 kHz bandwidth to transmit high-quality digital voice data. The increased amount of voice data permits high quality voice communication, providing superb sound quality for “rag chew” conversations.

#### Data FR mode (High speed data communications mode)

This high-speed data communications mode uses the whole 12.5 kHz bandwidth for data communications. The transceiver automatically switched to Data FR mode when transmitting snapshot pictures and can be used for transmitting large quantities of data at high speed.

### **AMS mode**

This function instantaneously recognises whether the received signal is a C4FM digital or conventional FM. The communication mode automatically switches to match the received mode. This function reduces the need to switch modes manually whilst monitoring the channel

### **Real Time Navigation**

In Digital V/D mode, information such as position data is transmitted together with the voice signal so distance and direction to the other station may be displayed in real time whilst communicating with them.

### **Digital Group Monitor**

This function automatically checks whether members registered to a group are within communications range and displays information such as distance and orientation on the screen.

### **APRS mode**

Yaesu Fusion transceivers have built-in GPS and 1200/9600 baud AFSK TNC for APRS functionality giving full APRS support. They include APRS Voice Alert and 1 button QSY support.

### **Group Monitor Function**

The Group Monitor Function automatically checks the current operating frequency to ascertain whether other stations are operating in the DN mode with the GM function, and are within communication Range.

When a group of radio stations that one communicates with frequently are registered in the memory, the GM function is a convenient method of exchanging messages, pictures, and notifications with group members that are within the sphere of communications.

A maximum of sixteen groups can be created in the GM function of the device.

A maximum of twenty-four stations, excluding ones own station, can be registered as members in each group.

Member lists and group lists are saved in the micro-SD card, and can be exchanged with other members.

GM will only work at the same frequency as other members.

### **Wires-X Mode**

A versatile system allowing connection via the internet to all parts of the world. News and messaging facilities are part of the package.

Operating Yaesu Fusion through a repeater is much like using any conventional repeater. Yaesu Fusion point-to-point or mobile-to-mobile is also the same as experienced with analogue FM. The use of Wires-X function is different.

Using a C4FM digital transceiver enables a very simple

access operation by following the on-screen instructions.

Digital functions are not available on an analogue FM transceiver, however, an audio QSO can be performed with an analogue FM station or a C4FM digital station via WIRES-X similar to EchoLink.

The diagram on the next page illustrates the facilities available from Wires-X

### **Searching for a Node Nearby**

With a C4FM digital transceiver an accessible node nearby can be found easily by pressing and holding the DX key peculiar to the Fusion radio. This sends a search signal at the current frequency or using a pre-set search channel. When a node is found, the operating frequency is switched to that node automatically, and the node ID and city name will appear on the screen since the node automatically transmits the ID information in return on receiving the search signal. When the list appears on the screen of the radio it is possible scroll down and highlight the node one wishes to connect with.

IDs of active rooms can be searched from the C4FM transceiver via the local node, whether established on a repeater or local gateway.

Finding a node or room from a connectable ID list - displays the list sorted in descending order from the room with the most number of activities (the most nodes connected)

### **Communications and the News function**

On successful connection to the desired node or room, communications are possible with high-quality digital sound. It is possible to upload messages, images and sound from the connection destination (node or room) as well as the local node. This is a new feature that enables the sharing of such digital data with other wires-x users all over the world.

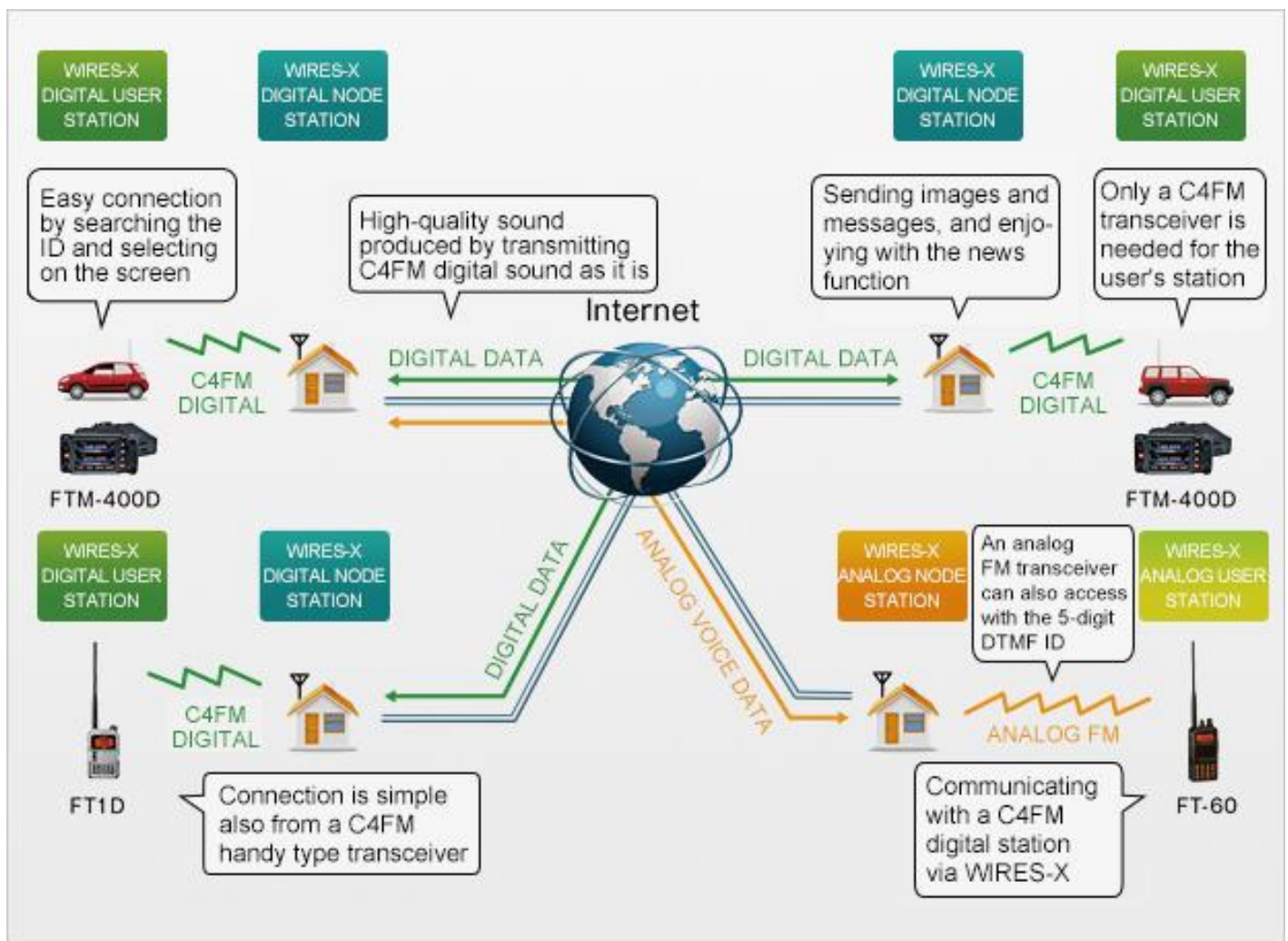
Operating Yaesu Fusion through a gateway or repeater using the MMDVM modem and connected to the Brandmeister network will require the same set of operating standards applied to the DMR system. Yaesu Fusion areas are referred to as chat rooms rather than talk groups.

The use of Wires-X is included in the manual for Yaesu C4FM rigs. One must use a Wires-X node or repeater fitted with Wires-X to avail of the facilities of this system. A gateway, such as MMDVM that supports Yaesu Fusion will not give these facilities. It will pass on position information to a Fusion transceiver in QSO.

The Wires-X system has many advantages but will not allow the cross-connection Fusion to DMR.

Facilities for the sending of data such as pictures and text messages are possible in this mode.





*An illustration of the facilities available from Wires-X*

### In conclusion

Yaesu Fusion is probably the most user friendly digital mode as the rig works straight out of the box in the same manner as any other analogue rig. No DMR registration required unless hotspot operation is envisaged.

One could get away without reading the manual but some of the features may be missed by doing so.

APRS is simple to set up. The GPS very quickly acquires the satellites. Whilst mobile the position data is continuously updated whilst transmitting to the other station. At the receiving end the direction of the transmitting station will be indicated on the screen of the radio along with the distance apart.

Wires-X requires a manual to be downloaded from the Yaesu site. It is not too complex a task to get started in in this mode. If you hated EchoLink you will find this mode way better as there are no horrible voice idents or grotty tones associated with it.

The digital voice is very clear and one will get used to the slightly different sound, so much that analogue will take a bit of getting used to!

The fusion mode may be used with all of the current hotspots, such as the DV4 Mini, DV-Mega and the Shark RF Openspot.

There are currently three Yaesu Fusion repeaters in operation. Limerick has one on 2m with the other on 70cms, and Donegal has a 2m system also.

When licences do get issued it is hoped to have one more Fusion repeater in the Dublin area, a Wires-X gateway in Galway, a multimode (DMR, D-Star, Yaesu Fusion) digital gateway in both Galway and Mayo and a multimode repeater in the Waterford area. It is hoped that the enthusiasm for the digital modes of communication will spread to other parts of the country.

### References and Sources

#### Yaesu Fusion

[www.yaesu.com/pdf/System\\_Fusion\\_Text.pdf](http://www.yaesu.com/pdf/System_Fusion_Text.pdf)  
[www.yaesu.com/jp/en/wires-x/user/index.php](http://www.yaesu.com/jp/en/wires-x/user/index.php)

**Digital Communications Guide** available from [https://www.google.co.uk/?gws\\_rd=ssl&pli=1#q=yaesu+Digital+communications](https://www.google.co.uk/?gws_rd=ssl&pli=1#q=yaesu+Digital+communications)

## Frequently Asked Questions

*(Arising out of Part 1 numerous questions arose.)*

### Q1) Which digital voice mode is the “Standard”?

**Answer** — All amateur radio modes are “standard” as in CW, SSB, AM FM and so on. Digital modes are each standard in their own right as in DMR, D-Star, Yaesu Fusion (C4FM) and P25.

### Q2) Which standard should we adopt?

**Answer**— this would be like stating that all amateurs should use only one mode like CW or SSB so this is a non-starter. If you are planning a repeater then seek advice from the potential users. Are there predominantly Yaesu Fusion users, DMR users or D-Star users in the area? It would be rather daft to establish a DMR repeater in an area where everyone is using Yaesu Fusion. Better still, seek something like a multimode digital repeater allowing all modes to be used. The repeater will automatically work on an individual mode as it senses its presence on the input. It may be that only two modes will be required and only these need be made available

### Q3) Digital Radio seems very expensive. Yaesu and Icom seem to be most expensive and DMR Radio seems cheaper.

On the face of it DMR is the cheapest, or is it? One can buy handhelds for DMR which will cost around €125 for a UHF or VHF handheld. One will be wholly dependent on a repeater or hotspot for a contact unless they only anticipate chatting line-of-sight and just beyond in simplex mode. Perhaps better if one does hill-topping and can extend the range this way. Of course, a VHF handheld will give better results. To date there are no dual band mobile radios and a single band UHF mobile radio will cost a minimum of €350 and UHF simplex is not a good choice for simplex operation over distance.

A VHF mobile will cost the same. From a cost point of view this is uneconomical. To be tied to a repeater for a contact is not really a great advantage. Ex-commercial Motorola equipment is expensive. It should be noted that it is not possible to attach a conventional linear amplifier to DMR radios due to the characteristic of the transmission as previously mentioned in Part 1. GPS functions are included in some of the more expensive transceivers.

Code plugs need to be written to make the radio operational. As repeaters and digital gateways become available, it will be possible to have a common code plug for the country.

There will be a Brandmeister network in Ireland to which repeaters and gateways can be connected allowing routing to other countries or just common areas or talk-groups.

#### Yaesu Fusion

Whilst it does not appear cheap and some say it is just another propriety mode introduced to sell Yaesu products. It has many advantages. The price of the equipment is not above average and quite within the pocket of the average radio amateur.

All Yaesu Fusion equipment can be taken out of the box and

after adding the callsign, on switch on the rig is ready to use.

No code plugs and it is just like buying any other analogue set but does have the digital mode available.

The transceivers are dual-band, dual-mode and have power levels of 5, 20 and 50 watts.

One can use the simplex point to point as one can with any analogue radio whilst mobile and of course are not confined to either just UHF or just VHF.

A GPS system is built in for digital positioning and APRS function.

Data may be transmitted with voice or by itself. There is a capability to take pictures with a special camera microphone and transmit these to another Fusion station.

The price of an FT100 dual band digital transceiver is £300. This is actually less than the price of a Kenwood TM-D710G with GPS built in and all the bells and whistles included costs £479.95 in Martin Lynch’s showroom. A Yaesu FTM-3100DE basic C4FM radio with no frills that will work through a C4FM repeater but has none of the additional features will cost £130.

Do the sums and see that digital equipment really is no more expensive than analogue

**D-Star equipment** is a little way over the top on prices. It is old technology but very popular still and is therefore and equal runner in the race.

**APCO P25** will be another mode becoming available but this will be expensive as all the equipment is only available via the major commercial radio suppliers.

Trying not to be too biased but all digital modes are equally as effective but they all do it a different way and therefore are not compatible with each other

## Midway and Kure Islands Reinstated as DXCC Entities

On March 31, 2017, the DXCC desk announced the deletion of Midway Island and Kure Island from the DXCC entities list. The stated reason for this action was because of changes in the administration resulting from changes in Papahānaumokuākea Marine National Monument, formerly known as the Northwestern Hawaiian Islands Marine National Monument, of which the Midway Atoll National Wildlife Refuge and the Battle of Midway National Memorial, the Hawaii State Seabird Sanctuary at Kure Atoll, and the Northwestern Hawaiian Islands State Marine Refuge, of which they are all included.

After further review it has been found that the deletion of these two entities is not supported by the changes that were made to the relevant administrations.

Therefore, the deletions from the DXCC list should not have occurred and the two entities, Midway Island KH4 and Kure Island KH7K, will return to the DXCC list as separate entities.



## 9N7EI Nepal 2017

### Pat Baynes EI5IX

The EI DX Group was set up in January 2016 and consists of Irish amateurs whose intent is planning DXpeditions, and to promote the DXCC program and our hobby around the world. The group today has twenty-seven members and is loosely based throughout the island of Ireland. During 2016 various group meetings took place where many ideas were shared and various plans were discussed for the group's first DXpedition. Many interesting faraway places were mentioned but when sky's the limit the 'Roof of the World' had an interesting ring to it!

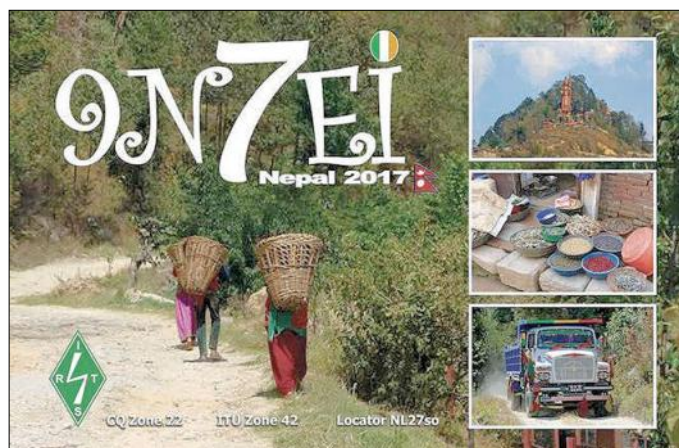
Nepal (9N), located in South Asia, shares territorial borders with India and China and with an area of 147,181 square kilometers and a population of approximately 30 million, sure who wouldn't want to be stuck in the middle of it calling CQ? Kathmandu is the nation's capital and the country's largest metropolitan city. Nepal was previously ruled as a kingdom, today it is a federal democratic republic, highly diverse and rich in geography, culture and religions. Nepal is well known for its exquisite natural beauty, with the iconic Himalayas running across the northern and western part of the country, sure it's the land of Mount Everest (8,848 meters) the world's highest peak including another 240 mountain peaks over 6,000 metres high. Yes, we can safely say that Nepal ticked all the boxes!

So why Nepal? Well, it came down to this...

1. It was affordable for a group
2. It was a fly in, fly out destination
3. It had hotels with electricity (well kind of)
4. It was possible to get a licence
5. It was on the top-100 most-wanted DXCC entities list.

Point 5 certainly was an interesting one; when it came down to some research Nepal was number 91 in the world's most wanted DXCC entity list and even for our planet's 3rd largest continent, North America, it was down at number 33 with South America following closely behind at number 68. So, when we put it on the green table it was decided that Nepal would be the destination of the group's very first DXpedition. Like all trips, DXpeditions entail the same issues: travel, customs, accommodation, transmitting licence, equipment, antennas, luggage, and costs oh and of course a team. Yes! a team competent enough with the ability and skill set to deal with the many challenges to be presented ahead. The first stage of planning is usually to do with feasibility – can it be done? The actual doing certainly follows later.

Obviously, travel was going to be feasible. There are scheduled airlines flying regularly to Kathmandu and there is an even wider range of hotels there to pick from, so accommodation would not be an issue. I must mention our thanks to Antonio IZ8CCW, Bernard F9IE and Eric ON7RN who from their previous MDXC activity back in 2011 under the callsign 9N7MD certainly provided us with lots of very useful information, especially during our planning stages. Thanks guys! So, with a target area in mind (Europe and North America), we set about looking for accommodation with an ideal take-off towards these directions. The 9N7MD location was certainly an interesting one but it lacked the



required take-off angles to have the impact needed towards our selected target areas.

Eventually, after searching various panoramas, photographs, topography charts even aerial maps up and down Nepal, we finally decided upon our QTH for the DXpedition. This was going to be on top of the mystical hills of Dhulikhel and from the Sojourn Himalaya Resort, which was at the highest point. The hotel was surrounded by lush green trees and offered magnificent views of the Himalaya Range and even catered to a European diet, so dates were immediately selected around March 2017 and yes, we thought, this was possibly one of the best locations for a DXpedition in Nepal.

Putting a group together for any DXpedition these days can be an absolute nightmare, so it was decided amongst the group in early 2016 to have a training exercise during the summer period. The IARU HF Championship contest was an ideal event to target and with thanks to the support of our national society, the IRTS agreed to give us the National Headquarters callsign EI0HQ to run for the contest. All 17 members of the EI DX Group at that time were invited to take part in this event which started on a green field site on the grounds of Garbally College in Ballinasloe, County Galway. A multi transmitter - multi operator effort was put together with the whole group putting on a fantastic display as our National Headquarters station for that July weekend in 2016. This exercise gave an idea of the skill set and experience within the group and certainly helped towards putting a team together for our first DXpedition.

In the autumn of 2016 various meetings amongst the group took place where equipment and antennas were discussed, having regard to our location selected in Nepal. A huge factor in these discussions was weight and the durability of the equipment selected; also consideration was taken towards where we were positioned within the solar cycle. The group recognised that previous efforts of other expedition teams in Nepal had achieved 23,211 QSOs. Obviously, with regards to cost, we recognised that if a group of say 12 operators was there for say 9/10 days, then we would have approximately 216 hours or thereabouts to equal this record, making a reasonable target of 107/108 QSOs per hour, so to say four stations 27 QSOs per hour per station. This would be looked upon as the baseline of operation. With anything below this

rate even within the first few days we would surely be struggling to equal the previous record set for Nepal. Yes, propagation was also mentioned many times and we all knew it would be constantly against us but being clever enough whilst making key decisions on band choices and knowing when to move to maximise openings to our target areas was certainly going to be the key to our success.

An interesting development in recent years especially the field of amateur radio is SDR technology. It certainly has come on in huge leaps and bounds as of late and we were just fortunate enough to be in a position where Icom (one of our main sponsors) was releasing a brand new lightweight portable SDR radio. Yes, the famous IC-7300. This radio was selected as the rig of choice; thanks to Icom UK for giving us a generous discount in the purchase of these radios.

Antennas were also discussed during these meetings and as we all know all antennas have different directional qualities. They do not radiate power equally in all directions so therefore antenna radiation patterns or plots against the limitations of our surroundings were very important calculations in making our decisions as to what was required to do the job. Charts were plotted and various predictions were made which certainly gave the group plenty of food for thought throughout the winter months of 2016.

When a selection of antennas were actually made in early January 2017, it consisted of the following: 160m an Inverted L made from wire and held 22m above ground, an 80m vertical which was going to be ground mounted on an 18m fiberglass Spider-pole. For 40m this was also going to be a

ground mounted vertical on a 12m fiberglass Spider-pole and for 30m we decided to use an elevated vertical on a 12m fiberglass Spider-pole. This was going to be up on the flat roof of our hotel and due to where we were positioned in the solar cycle we recognised that having a WARC beam antenna would help maximise our QSO count and give us extra gain on the WARC bands. (3el on 30m, 3el on 17m and 4el on 12m). All of these were from Spiderbeam (another one of our sponsors). As for receiving signals on the low bands in Nepal and especially with relation to noise on vertical antennas, a broadside loop and a BOG antenna (Beverage on Ground antenna) were selected. For the higher HF bands (20m/17m/15m/12m/10m) a selection of 2 x SP7IDX Technology HEX beams were selected along with the fantastic Acom 1010 amplifier for that little bit of extra gain. There were also two sets of Dunestar Bandpass Filters selected and just over 1,100m of lightweight Messi & Paoloni coax cable. We would also use five networked laptops, running WinTest logging software in DXpedition mode. We had a realistic target of 30,000 QSOs and if we were able to achieve this not only would we set a new record for 9N but we would also get listed on the GDXF Mega DXpedition's Honor Roll.

So then, gaining our transmitting licence for Nepal. Dave EI9FBB, our expedition leader with the aid of the manager of the Sojourn Himalaya Resort, applied for a licence from Nepal's Ministry of Information & Communication department (MoIC). Previous attempts involving local radio amateurs proved unsuccessful in obtaining a licence. Our local contact needed to make several trips into the MoIC office to explain and fight our case. Thankfully, his





persistence paid off and, although expensive, it was finally issued along with our requested callsign, 9N7EI. Going down this route gained our group an extra day of operating time. This department manages the postal services, telecommunications, broadcasting, press and information and film development for the country. Nepal's licences are rather unique; especially unique is the high cost involved and the frequency pairs given. We decided that operations would take place on 9 bands and would come with a cost of \$1000 (\$80 per licence for 12 operators) and, if agreed, we would be given the callsign selected which was 9N7EI.

Over the winter months Dave EI9FBB, Jeremy EI5GM and Pat EI9HX decided upon a 12-man team – we planned for 4 x stations so therefore a 12 man team was ideal. It consisted of the following Irish amateurs representing various clubs throughout the different regions of Ireland: Enda EI2II, Thos EI2JD, Alain EI2KM, Pete EI4GZB, Jeremy EI5GM, Dermot EI5IQ, Pat EI5IX, Declan EI6FR, Dave EI9FBB, Declan EI9HQ, Pat EI9HX and Hugh EI9KF. This all-Echo India team brought a wealth of experience and variety to the operation at hand - several were well known and active contesters while others were world-recognised DXpeditioners, a fantastic mix which worked well together.

In early January 2017, Dave EI9FBB and Jeremy EI5GM were driven demented weighing items. First were the items of importance, then it was a case of see what could be squeezed in after. Luggage was obviously an important factor of this operation and at an EIDX group meeting Jeremy EI5GM brought suitcases and various luggage to show the different sizes required and explained on how to pack for the trip. Dave EI9FBB budgeted for 2x23kg bags per person so each operator's personal allowance was 15kg and each needed to have space to fit an extra 8kg of radio items into your suitcase/bag. A 7kg carry-on allowance was also in addition to your 15kg allowance, so in total each person got 22kg, then everything else was radio equipment. There was an important note here. Excess baggage was chargeable at €70 per kg so if you went 3kg over you would be charged €210 before you

even left. In total, our 12-man team had about 600kg in luggage going to Nepal. I thought to myself, "Thank God it's the plane that's carrying this and it's not me!"

In early January 2017, the dates for the DXpedition were set in stone - from March 8th – March 20<sup>th</sup>. A press release was drafted and we launched our website [9n7ei.com](http://9n7ei.com) in mid-January. After news of our launch broke throughout the wider amateur radio community, we were certainly delighted to have received a very generous donation from the IRTS. It was great to have the support of our national society. At the beginning of February 2017 things were picking up pace, an operating roster was drafted up and testing of our station's design including antenna construction began. Yes, all 500kg of it was all tested before the infamous packing process begun. Things were now in countdown mode and this DXpedition was certainly taking shape. Updates on the website continued daily. Thanks to Jari OH6BG/OG6G for his help with very useful propagation-prediction charts (VOACAP Propagation) that were made up especially for our DXpedition and aided the DXer in terms of them gaining knowledge of possible openings from their QTH with our DXpedition.

With all plans in place, on March 8th, 2017 at 08:00 hours the 9N7EI team met at Terminal 2 in Dublin Airport. After the greetings were out of the way, the distribution of weight began and everybody was handed 8Kg worth of radio items to add to their luggage. The thing about being a large group with one destination and a massive amount of luggage is that airlines often allow you to check it all in at once. This was very useful to us as we were taking various connecting flights from Dublin > Amsterdam > Abu Dhabi > Kathmandu. So once the luggage had finally gone, the last Full Irish was swallowed by the team, it was time to board. Aer Lingus was our first leg to Amsterdam and then we flew with Etihad thereafter to Kathmandu for a combined total of 27 hours. The flights were long and the in-flight service... ah sure it was grand. I mostly sat alongside Dermot EI5IQ and Declan EI6FR, where many discussions of their previous



DXpeditions proved rather entertaining and made the journey pass somewhat quicker. Flying is always a stressful experience even making sure to be in the right place at the right time in different airports and not losing anything especially tickets, your passport or your mind can always be a challenge. But the highest point of stress I find is of course arriving at the destination because all of the unusual luggage could possibly be held by customs, thereby ruining the entire trip. Thankfully, for us this process went without any issues.

Tribhuvan International Airport in Nepal is about 6km from the city centre, in the Kathmandu valley and is apparently a haven for baggage theft. Many suitcases are stolen every day, so to reduce the risks of any of our baggage being stolen and from experience Dave EI9FBB compiled a simple yet effective system. Each bag was easily identifiable as we had every piece tagged with neon blue tape. In addition to this, each bag was also individually numbered - personal baggage was odd-numbered while radio equipment was even-numbered. Our three oversize ski bags were labeled 1, 2 and 3 followed by our four peli-cases of amplifiers being 4, 5, 6 and 7. The contents of each case were catalogued so if any bag should go missing it would be easily identifiable. After all checks were done, Thos EI2JD one of the operators and our group photographer took a few group shots in the baggage area and once the photos were out of the way, the manager of the Sojourn Himalaya Resort came running into the baggage area to bring us outside. He had a fantastic welcome for us and even brought their traditional welcoming flowers that were given to each of us upon our arrival. Lots of people were coming over to us "can I help you, Sir?". It was

all a bit confusing at the time, but we spotted our bus and made a bolt for it so we could start loading in our luggage and equipment.

The journey to Dhulikhel where our QTH was situated was somewhat interesting. It approximately took around an hour to get there, but along the way we passed some very interesting sites like Durbar Square, which is a complex of temples and statues and is the old royal palace. Even in the distance it was a stunning sight to see in the evening sun which lit up all the red and brown buildings surrounding it. "Something we must come back to in the coming days..." was mentioned. As we continued along the earthy roads, I was amazed at the detail and intricacy of the wood carving on some of the buildings along the way. However, sadly the Gorkha 2015 earthquake caused a lot of damage to these buildings with cracks appearing in a lot of places including several statues and temples being demolished. This was sad to see as it has such a big impact on tourism, which is a vital part of the Nepalese economy. I couldn't help but notice along our journey cattle, monkeys and various wildlife everywhere, which made the journey very atmospheric. This already was such an interesting place and not even a radio switched on yet. Traffic to Dhulikhel was slow and the roads were somewhat chaotic, I managed to spot a few prayer flags along the way up to our hotel and even witnessed an amazing sunset take place through the mountains just before we arrived in the village of Dhulikhel which sits along a ridge of a valley.

Upon our arrival at the Sojourn Himalaya resort, the staff helped us unload our baggage and equipment into the conference room which was going to be the home of 9N7EI for the next ten days. The hotel staff at the Sojourn Himalaya Resort were excellent, very helpful and courteous. They checked everybody in quickly and paired us off into shared rooms, then after a quick freshen up the staff had prepared an evening meal for us. We ate like kings that evening. I was delighted with their choice of food it was a mixture of Chinese and Indian which was excellent. As soon as we finished we were very eager and motivated to get the conference room prepared so we began station set up. After the general layout of the room was put in place, then laptops, rigs and amplifiers were set up and it was then time for a well-earned rest. Nobody needed rocking to sleep that night!

At 06:00 everyone was up and at it, raring to go! The breakfast was grand and with a brief meeting we were all broken up into teams to start on the outside work. Masts, antennas and cable were strung together and after some lunch we had all the outside work complete, one couldn't help but notice that when outside the weather was changing throughout the day and it became cloudier certainly into the afternoon. Once we had all final checks and tests conducted, we could put our first signals out at 12:00UTC on March 10th. By this time of the day we had already experienced several power cuts to the hotel and lightning storms were beginning to appear! This was not good news. All four of our stations began calling CQ. We were in full swing at the time with a few hundred QSOs in the log, when, next thing... BANG... Our first power cut and to be the first of many. We closed the station down that evening while the lightning storm passed. Operators got some much-needed rest and just before our grey-line in the early hours of the





morning, we were back up and running on air again. We all operated pile-up style just giving a brief 59 or 599 report to each station, so that as many people as possible could make a contact with the rare country.

There was no sunspot activity and we were fortunate to have a low A and K index for the DXpedition although static noise was frequent. The pile-ups continued and propagation was very strange with some weird openings at times; strangely enough right after sunrise each day the bands would all die away with no signals anywhere in the spectrum except for the first hop on 20m and then later in the day propagation would start to increase up the bands, where we were constantly trying to find openings with our targeted areas. Every time an EI went through our log there was a massive cheer in the room... it was great working your home country from abroad.

Declan EI6FR and myself (Pat EI5IX) put together the 160m inverted-L made from wire and tuned it to a 1.3:1 SWR for the CW section of the band, this was held off the roof of the hotel at 22m above ground. That first night on 160m will never be forgotten, the A and K index were particularly low and we said, "ah sure we would give it a bash". "Probably work only a few lads up the road", was said. Tuned up the system and I put out a few CQs on CW and nothing, next thing... what's that... nah... were getting spotted in Russia and some Eastern European countries? WOW is this happening? couldn't be, could it? 160m opened for us that night with some amazing QSOs made. I'll never forget making some QSOs with EI stations Doug EI2CN and Don EI6IL. The adrenaline rush going through you whilst trying to get all the characters across on the key... it's exhilarating!

Declan recalls an amazing highlight for him on 160m that morning. *"The most memorable QSO of the trip for me was with Jose de Sa CT1EEB. I've been working Jose for many years even since first starting out making IOTA DXpeditions in the 1990s. On this morning on 160m I had just started my shift and sunrise was fast approaching, the few EU stations and Russians I had just been working were fading fast. Suddenly, with the sun peeping over the mountain opposite, out of the noise came a strong CT1EEB, a good 569 signal. Excited, I hit the key and at that very second the power went out to the shack. I guess the power was out for about 10 mins and the sun was fully above the mountain when it came back, but there in full daylight was Jose still calling, this time weakly at about 539. As the amp was going through its three-minute warm-up cycle I desperately started sending CT1EEB his report with 100 watts, but he just was not hearing me. That three minutess seemed like three hours as Jose faded in to the noise, then at the very last minute with the sun well up*

*in the sky the amp kicked in to operate, and I sent Jose his report again. Delighted, I heard his report come back and we made a solid QSO, and then Jose and the band was gone. In a follow-up email Jose tells me he's waited 30 years for 9N on 160m, one of the few remaining he needs. That's the joy of DXpeditioning, being able to bring that moment of happiness to a brother ham. Dec EI6FR/9N7EI"*

The next day we had visitors to our station, members from the SK3BG Group, Rasmus SA2LUL, Johannes SA3TOA, Felicia SA3MAJ and Jonas SA3JIF their teacher. They were in Nepal on an interesting project. Their secondary school studies natural science with focus on civilian crises management and during the 2015 earthquake in Nepal. They followed the terrible catastrophe closely and they became aware of the unique function that amateur radio played in the communication in and out of Nepal. After that, Jonas SA3JIF and his pupils considered becoming radio amateurs. The pupils interested passed their exams and got their license and were on a 21-day study trip to Nepal. They went to visit NAROS (Nepal Amateur Radio Operator's Society) to learn more about their work and how they could help in future catastrophes in Nepal. They came along to our station to see how a DXpedition was put together and to try to make a QSO with their SK3BG Group back home in Sweden. They were successful in making this QSO and we would like to thank them for coming to visit us and look forward to hearing them on the air in future.

The pile-ups and power cuts continued as did the QSO count and each operator was well drilled and in a groove at this stage. My routine was sleep, eat, operate, eat, operate, sleep, etc., not necessarily in that order either. Many hours were put in on the radio and everyone was committed to the cause. A refreshing break was mentioned one day over lunch, a bit of sightseeing, so we organised a day trip to the UNESCO world heritage sites like the Basantapur and the Patan in Durbar Square in Bhaktapur. This is a historic little town which is just a short drive outside of Kathmandu and about an hour from Dhulikhel.

The name, Bhaktapur, literally means a 'place for worshippers.' But it's much more than that. It's got something for everyone. Nearly two years after the Gorkha earthquake of 2015, Bhaktapur Durbar Square still bears the reminders of the devastating quakes — buildings with archaeological importance supported by poles, damaged statues and temples with workers clearing the debris of what's left of the demolished structures, I found there was an eerie silence around the place but was amazed to see some of the temples and houses made of bricks literally just glued



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Echo Ireland

together with mud. The streets were bustling with worshippers, residents, tourists and folks from all over Nepal and as you walked around you couldn't help but notice the many handicrafts; men selling some amazing items like, cashmere clothing, Thangkha paintings, dragon masks, little temples made of wood, and other artifacts made from brass. These are regular sights at Bhaktapur Durbar Square nowadays — the quake aftereffects remain, reconstruction work is on-going and the number of visitors is increasing, which is great for Nepal's economy. I can only recommend going there at least once in your lifetime. We also celebrated St Patrick's Day on March 17th here, and a fantastic meal was put on for us that day and washed down with some "Everest" beer. Tasty stuff I might add.

So as the days progressed, so did our QSO count and just after 30,400 odd QSOs, we had another power cut. Everyone agreed at this point, that we should go QRT and make use of the daylight hours that were left to begin station tear down. This consisted of taking down all our antennas, rolling up the coax and re-packing everything in the correct order so it could be weighed and accounted for before our departure the next morning. The tear down went smooth and that evening the Hotel staff put on a party for us where we got to exchange pleasantries and a chance to relax and enjoy a few drinks with the whole group and reflect upon a job well done. Everybody got an early night that night and was up bright and early for breakfast the next morning. The hotel staff had a fantastic

farewell ceremony for the whole group and helped us load our luggage onto the hotel bus and get us ready for our journey back home to Ireland.

The flight home was smooth and much needed rest was taken advantage of. 9N7EI was now history! We achieved what we set out to do! Get onto the GDXF Honor Roll with 30,414 QSOs and with 12,030 unique callsigns in our log (40%), we worked 134 DXCC entities with 850 QSOs into North America and we also achieved a 160m operation from Nepal. Everybody within the EI DX Group was delighted with how our first DXpedition went and the words on everyone's lips after this trip is... "Where to next???"

All in all, 71 different EI callsigns made it into our logs, with a further 20 from GI. It was always a thrill to work our homeland, and between EI and GI, over 250 QSOs were made from 160m through 15m. We would like to thank all of you for taking the time to work us on the air and for your support throughout this DXpedition.

Soon after our return, our log was uploaded to LoTW and to date ALL QSL cards have been mailed. Thanks to our QSL Manager, Charles M00XO for doing a fantastic job with our QSL work. We're already looking forward to our next EI DX Group adventure ... we hope you are too ... watch this space, it will be announced soon!

## IRTS Publications Library : Update

### Joe Ryan EI7GY

The March issue of Echo Ireland carried an announcement about the launch of the IRTS Publications library [irts.ie/library](http://irts.ie/library) which holds PDFs of some of the society's newsletters, call books and year books that were published up to the year 2000. In response to our request for more material for the online library, we have been able to add some very interesting content: our thanks to those members who unearthed copies of old IRTS publications and loaned them to the society for scanning.

Included in the recent additions is a real gem, a newsletter from July 1948. That issue included lots of updates from individual members on their activities; one of these updates contained an interesting comment by EI6U (Ian Morris) that "It may be necessary to dynamite a certain well-known flashing sign to achieve quiet reception" — reminding us that the EMC problems we all face are not new! Another item in the 1948 newsletter with a contemporary resonance is a reference to complaints from overseas operators about the absence of QSLs from EI stations. In the same issue you can read a report on National Field Day 1948 as well as VHF notes about activity on "58 M/c" — the 5 metre band which radio amateurs lost to broadcast TV in the 1950s. The DX column, written by Tom Green EI9N shows that EI stations were working plenty of DX 70 years ago, mostly with home-made equipment and definitely without the benefit of the cluster!

From the 1950s, the library only has a call listing (interesting in itself as it seems to be a fairly complete list of single-letter EI call signs) but no newsletters. No doubt our members were involved in plenty of experiments and activities during the 1950s, much of it probably using war surplus equipment: if anyone has any IRTS published material from this period, we would be delighted to incorporate it in the library.

We have better coverage of the 1960s, with 10 newsletters from this decade. By the 1960s, SSB was in widespread use, as was RTTY. Also, amateur radio satellites (the first was launched in 1961) were attracting plenty of interest. The library has only 6 newsletters from the 1970s, when for a while the name "VOX" was adopted as the title of the society's printed news.

In just a few months we have managed to assemble a significant library of past IRTS publications. There are some major gaps, however. Let's hope that some of these can be filled: if you can locate copies of newsletters that are not in the library, please contact Séamus EI8BP or Joe EI7GY.







# A Complete Portable CW QRP Station

## Tony Breathnach EI5EM

*Tony EI5EM was awarded the Folan Shield for this construction project at AGM 2017— Editor*

### Overview

This project is centred on a Youkits HB-1B QRP rig. The rig is a 5-band CW transceiver with a maximum of 5 Watts output. The 40,30,20,17 and 15 metre bands are covered but performance on the 17m band is slightly down and compromised as the 15m filters are used on that band also.

Having been impressed by the many two-way contacts I made with this rig from home on my G5RV, I thought it might be fun to design and build a complete stand-alone portable station and house it in a wooden case with an easily erected antenna attached. This would be a challenging but enjoyable project, which took about three months to complete.

I purchased a high-capacity rechargeable Lithium battery and decided to home-brew the following additional units, which I considered necessary:

- UN-UN Switch box (unbalanced to unbalanced transformer),
- Antenna tuning unit (ATU),
- SWR meter,
- Audio amplifier.
- Iambic memory keyer,
- Capacitive touch twin-paddle key,
- Fused power distribution box,
- Wooden case,
- Extendible vertical antenna.

### UN-UN Switch Box

I wanted to be able to match a wide range of antennas to the station. Random length wire antennas often present a very high impedance which can be problematic to transform down to 50 Ohms, even when an antenna tuning unit is used. I constructed a 9:1 UN-UN transformer using a T80 toroid to solve this problem and housed it in a plastic box. As I didn't want the transformer permanently in line, I incorporated a two-way switch to bypass it for normal use. The switch box is connected between the antenna and the ATU.



UN-UN Switch Box



ATU



SWR Meter



### Antenna Tuning Unit (ATU)

The ATU is a classic T configuration. Two polyvaricon twin-gang variable capacitors are used. Each polyvaricon consists of two separate 285pF capacitors and if necessary the two gangs can be paralleled with a toggle switch to give a capacitance of up to 570pF, which is more than adequate in most cases.

The 12-tap 20μH inductor is wound on a T-130 toroid and a rotary switch selects the individual taps. This configuration is very versatile and matches a wide range of impedances. I decided to use BNC connectors for the ATU and SWR meter as these matched the antenna connector on the rig. I housed the ATU in a die-cast metal box and used identical boxes for the SWR meter, twin paddle and keyer.



### SWR Meter

The SWR meter is based on a design from the G-QRP Club by Ian (G3ROO) and Tony (G4WIF). As the power is only 5 Watts, a resistive bridge is used because resistors are cheap at that power level. The meter circuit includes a three-position switch and a potentiometer. The potentiometer is used to set the meter for full scale deflection with the switch in position 1 and a carrier applied. In position 2 the ATU is adjusted for minimum meter deflection, indicating lowest SWR. Once matching has been achieved, position 3 is selected to bypass the unit. A big advantage of this configuration is that, under all antenna tuning situations, the maximum resistance presented to the rig is 100 Ohms, thus protecting the output transistor from possible damage.

### Audio Amplifier

As the Youkits HB-1B transceiver has only a headset audio output socket, I built an external audio amplifier using an LM386 IC to drive a loudspeaker. The unit incorporates a volume control and its own headphone socket which, when used, mutes the loudspeaker. The case is plastic as the type of die-cast box used for the other units is too small to accommodate the loudspeaker. I designed and etched a small PCB for the amplifier, and glued it in place with impact adhesive.

### Iambic Memory Keyer

I purchased the K16 PIC chip (from K1EL) for the memory keyer online for \$8. It can be customised for personal preferences. I configured mine with three memory slots. The various commands and menu options are entered using Morse code when in COMMAND mode. The keyer is very versatile with many nice features. It is powered by two AAA batteries and draws almost no current when asleep. I also designed and etched a PCB for this unit. A small piezo speaker is included as it is necessary to hear audio feedback when in COMMAND mode. The speaker can be muted for normal use.

### Capacitive Touch Twin Paddles

The circuit for the twin touch paddles came from the website of John (M0UKD). Surface mount devices are used throughout. This was my first venture into SMD construction and needed a steady hand and good eyesight to etch the board and solder the components. I used no special tools during construction except a jeweller's loupe magnifier to check my work. The unit is powered by two AAA batteries and

incorporates an ON/OFF toggle switch. I had to modify the circuit by adding two RF chokes to eliminate feedback on the "dit" and "dah" lines.

### Power Distribution Box

I used a small plastic case for the power distribution box. The output from the Lithium battery plugs into the box, which is fused at 1.5A. Three output sockets are mounted on top. One output powers the transceiver, another powers the audio amplifier while a third socket is spare. The box housing the battery incorporates an ON/OFF master switch. The twin paddles and memory keyer are both powered by internal 3Volt batteries (two AAA cells). As the audio amplifier is powered from the Lithium battery and controlled by the master switch, I considered it unnecessary to incorporate a separate power switch on the amplifier front panel.

### Wooden Case

Having built and tested all the units, I needed a box or case to house them. I set the units out on the kitchen table and arranged them in a logical order. I allowed adequate space between them for cabling and interconnections. When satisfied with the layout, I sketched a plan for a suitable case and asked my local timber supplier, Larry's in Drumcondra, to cut plywood to size for me. Thankfully, my plans worked out and all the pieces of plywood fitted together nicely.

When I had assembled the case, I attached the units using double-sided tape. I fitted hinges and magnetic catches for the lid and also attached a carrying handle. Later on, I discovered that with the vertical antenna attached and extended the wind was causing the case to suddenly slam shut with the danger of damaging the antenna, nearby persons or objects. A pivoting wooden bracing lever was added to overcome this problem. Two light metal chains are used to prevent the lid from opening beyond 90 degrees and the heads of all the wood-screws are countersunk.

### Antenna Connections

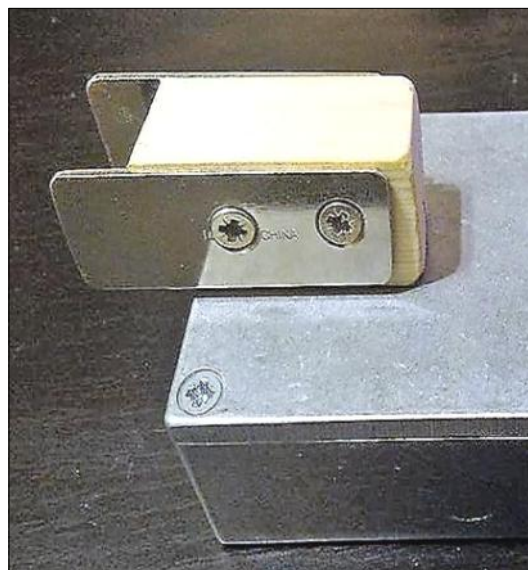
I was in two minds whether to incorporate an antenna into the project or to rely on an external one instead. After much thought, I eventually decided to attach the antenna mount to the exterior of the case. I considered whether the side or back panels would be more suitable. However, as the plywood at the back was only 6mm thick, I settled on the sturdier 9mm side.



*Audio Amplifier*



*Iambic Memory Keyer*



*Capacitive Touch Twin Paddles*





I rooted through my junk box and came up with an old mobile antenna mount with a threaded stub. I also found a short aluminium rod which was threaded at both ends. One end had a coupler which screwed onto the stub of the antenna mount. This short rod forms the bottom section of a vertical antenna and is permanently attached.

Many years ago, Ray McCabe (EI7AHB) gave me the bottom helical section of a G-whip antenna. I came across this, several threaded hollow tubes and a threaded telescopic section 170cm long in my garden shed. I had bought these at the Dayton Hamvention many years ago not knowing at the time when or whether I would ever use them. Once all these sections were assembled, I had a nice vertical antenna 450cm (15 ft.) long. This can be easily and quickly assembled, as all the sections screw together.

I made two supporting aluminium brackets for the short rod and antenna mount. The brackets were fabricated from a sheet of aluminium given to me many years ago by the late Seán Cooney (EI5GH). I placed a plastic sleeve over the permanent rod to insulate it from the top supporting bracket.

The lower bracket, in addition to accommodating the vertical antenna mount, also accommodates an SO239 socket and two terminal posts, one red and one black. The red terminal post allows connection of a random length wire antenna. A counterpoise or earth wire can be connected to the black grounded terminal post. The antenna can also be L configured by connecting a horizontal wire of approximate equal length as the vertical to the black terminal post and laying it out along the ground. Antennas with PL259 connectors can be connected to the SO239 socket.

The short rod, red terminal post and centre pin of the PL259 are all connected together. The black terminal post is grounded to the lower mounting bracket. The antenna is angled slightly to the rear to balance the case when open preventing it from suddenly closing during windy operating

conditions.

### Station Layout

At the beginning of the article is a labelled photograph of the station and its component units. The transceiver is at the bottom centre. The twin paddle and keyer are towards the right-hand edge. The coaxial cable from the antenna connects to the UNUN switch box where it can go via the 9:1 transformer or bypass it completely and connect to the ATU. From the ATU the coaxial cable connects to the SWR meter and from there to the BNC antenna socket on the transceiver. Audio from the headphone socket of the rig connects to the input of the audio amplifier. The battery connects to the distribution box which is fused at 1.5 amp. There are three output sockets on top. One feeds power to the transceiver; another powers the audio amplifier and the third socket is spare.

### Field Tests

In 1905, the British Post Office used the Martello tower in Howth as a receiving station for radiotelegraphy tests. RMS Monarch was equipped with Marconi equipment and steamed to various locations in the Irish Sea transmitting its location and technical information back to Howth where reception reports were recorded and comparisons made under different experimental transmission and reception conditions. One report describes how a metal mesh mat was lowered into the well within the tower and used as an earth connection.

This gave me the idea of conducting a similar experiment but this time driving rather than sailing to different locations. I arranged this with the help of Joe (EI2JZ) who remained in the Martello listening to my 14 MHz test transmissions and noting the signal strength. We used Baofeng UHF rigs for talkback.

My first transmission was from the public car park at the entrance to the golf links in Portmarnock. After that, I drove to the beach carpark in Malahide. My signals were received loud and clear from both locations. Admittedly this was not DX. However, the experiment was a success and the experience very rewarding. I hope to repeat the experiment again in the near future from locations further from Howth and also using other bands.

Pleased with the results, I drove back to Howth to get Joe's feedback. He had recorded a short video clip of some of the test showing my signal on the display of the Flex 3000. The tone was pure, strong and crystal clear. All in all a great result and experience. It was also a great honour to have, in some small way, emulated the 1905 experiments of those early wireless pioneers.





## Excerpts from the HX files

### Pat Fitzpatrick EI2HX - Excerpt 039

*Hello and welcome to Xtract 039 of the HX Files.*

I am waiting on a couple of parts to finish a project, so whilst I wait for them here is a useful mast for you to mull over.

#### One mans junk

The idea for this mast came about whilst walking on the beach with Jake, a springer/pointer cross.

Not that Jake gave me the idea for this project but on this particular walk we came across the remains of a large trampoline. The trampoline had been dumped by some (insert rude word here), and it was not in the best of condition as it looked like it had been run over by a truck, or the former owners were of the fuller figure. The former owner decided to dump it on the beach but it was so far up the beach it was outside the tidal range of the normal seas.

#### Might come in handy

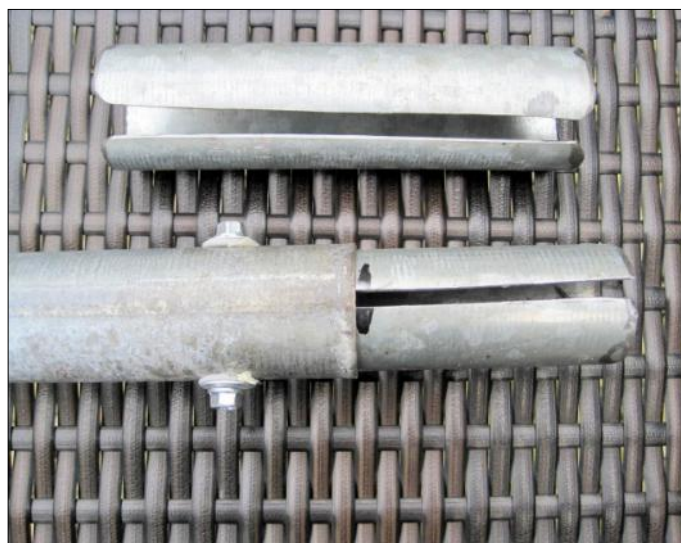
I had a look at the mess of netting and twisted poles, and noticed that some of them were in good condition, but what would I be able to use them for? They looked to be over 4ft (120cms) in length and maybe they would do for a stand off pole or they just might come in handy for something. I carried on with the walk thinking about them and their possible usefulness; would they fit in any of the sheds I have at home? On the way backup the beach the decision was made to see how many poles could be saved. Some caveman McGyvering was deployed to get at the poles, by using some of the abundant supply of rocks and stones on the beach; one as a hammer and another as an anvil. The nylon type material and netting was “cut” away so the poles could be removed albeit with the hindrance of Jake, he thought it was great fun dragging the netting around the beach.

It turned out that each pole measured 53 inches in length and 1½ inches in width (134cms x 40mm). Each pole was tapered at one end to fit into another pole, and give it a total height of 8 feet around the trampolines edges. All bar one of the tapered poles were too badly damaged to be of any use (or so I thought). All of the remaining poles had the same opening at either end. Anyway, I ended up with 7 poles in total. I used the dog lead to make a carrying handle wrapped around them and home they came with me. Over the next couple of days I had a look through the stock of other small pieces of pipe I had at home but none would be a good enough fit for the poles.

#### Hammer time

A few days later saw me back at the spot on the beach and I brought home some more of the damaged poles. The plan was to cut pieces 6 inches long (15cms); remove a piece along their length so they would look like a “C” shape and then by using a clamp; close the gap so it would fit into the pole. I then used some self drilling screws to join them together, as seen in photo 1.

The joining was so rigid and tight that it acted as a single pole and it was a pig to separate the pieces. I made use of the wall



*Photo 1*

and a number 2 hammer to loosen the bond, just enough to separate them. Some fine tuning with a hammer and file was done and a mental note taken that a can of spray oil is to be included in the kit bag.

**A word of safety and caution:** please use safety glasses and gloves for your protection when using any tools.



*Photo 2*

I was planning to cut the pole into pieces and then to cut a slot in them. I was advised to cut the slot in the complete pipe first and then into the required lengths as this method would be easier and above all safer for me.

In Photo 2 you can see the two different choices of screws/bolts and stay clamps that could be used. I decided to use the screw/bolts on the top and bottom right. Therefore using the larger headed screws and some homemade stay clamps made from an old ptfе chopping board (also found on the beach a couple of weeks after the poles). The beauty of this was that the screws would stop the stay rings from falling down and it





Photo 3

would also allow the stays to remain in place so that the mast could turn if a beam aerial was being used.

An Armstrong 2015 rotator would be used to point the beam. I used a piece of angle iron and I drilled a couple of holes in one end. This enabled me to use a U bolt to clamp it to the pole allowing me to fix it to the ground to stop it rotating on its own. Also one of the self drilling bolts was drilled into the bottom of each pole as these bolts would slot into the gap of the joining piece of pipe and this would stop any of the poles moving on their own.

### Useless poles

Back to the damaged lengths of poles as mentioned earlier. Just one of the good poles had the tapered end so that the damaged ones came into use. Some of them were bent in the middle and it meant that part of them could still be used. The vertical aerial used would have the tapered end of a damaged piece bolted to it, which means that when on site it only have to be slotted into the top of the pole. Another piece made was a “T” for the top of the mast as can be seen in photo 3.

The “T” bar two pieces were welded together as using a clamp would damage the holdall carrying case. Welding the poles was done for me by my brother (who is more used to welding 50mm thick metal than less than 2mm), some grinding and sanding was done to one end of a tapered piece so it would have a “U” shape to it, and then the horizontal piece welded to it.

In Photo 4 you can see a small piece of pipe (50mm) was welded to a flat piece of metal (100mm) this would stop the mast sinking into the ground if it was being rotated a lot during its deployment, also seen is the spikes to hold it in place, these were made by welding a nut to the end of a bolt.

### A handy little mast

As you can see from this simple little project it turned someone’s junk into a handy little mast. It may not be skyscraper high but it has the capability to reach 30 feet in height and it fits into the boot of a car as not everyone has a



Photo 4



Photo 5

roof rack on their vehicle. A single 20 foot pole with no joining may be handy when on site but this mast in its kit bag is more practical than bringing a 20 foot pole with you and then carry it to your deployment area.

Whilst one person can carry it, it is recommended that two people erect it; one in the middle to slot it all together and the other person can anchor the guy ropes to insure everyone’s safety. What I will do is make up a how to assemble it list, laminate it and keep it in the kit bag along with a Diamond X30 dual band aerial and a length of coaxial cable.

In Photo 5 you can see that the whole kit fits into this fishing rod bag that was bought in Aldi last year. (as it looked like a handy bag to have) It opens up completely and it also has plenty of pockets to hold the rest of the kit with a carry strap to be carried like a backpack.

So that’s it. You may get an idea or two from this article; you might even have some damaged poles in your surplus stock, which you could find a use for and perhaps even a more manageable size to take portable with you.

73s Pat

## EI0SIX

EI7BMB reports that the EI0SIX 50MHz beacon is now QRV from Enniskerry Co. Wicklow on 50.005MHz. Set your dial on USB to 50.004.2MHz and listen for tones using PI4 software - available free from OZ2M website.

Beacon TX period is first 60 seconds of each 5-minute time slot. CW is the towards the end of the period. Please spot if you hear it.

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[www.irts.ie/renew](http://www.irts.ie/renew)

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## AGM Notes

### John Owen-Jones EI1EM

The 2017 AGM was held at the Crowne Plaza hotel, Dundalk on Sunday, 9<sup>th</sup> April 2017 at 2pm. It was preceded by a very well-attended dinner on Saturday and a rally well-supported by members and traders. The whole weekend was organised by Dundalk Amateur Radio Society and great credit is due to them and in particular Brian EI8EJB for an excellent weekend. The Society was delighted to welcome invited guests Nick Henwood G3RWF, President RSGB, Derek O'Reilly from ComReg and Rory Hinchy EI4DJB representing Mr Denis Naughten T.D., Minister for Communications, Climate Action and Environment. Unfortunately, Don Beattie G3BJ, President IARU Region 1 had to tender his apologies due to a prior commitment. Councillor Conor Keelan, representing Louth County Council, attended as the guest of Dundalk Amateur Radio Society.

**AGM** business was duly completed by 4.38pm with an audience of 51 members in attendance. Highlights of the meeting were the address by the IRTS President, Gerry Gervin, EI8CC, and the presentation of this year's awards.

**New committee nominations:** As no additional valid nominations were received, the list of committee nominations that had already been circulated were duly deemed to be elected. The names of members of the committee and of officers of the Society can be found on the website and inside the front cover of each issue of Echo Ireland.

**AOB** proved to be fairly lively with concern being voiced on a number of issues. Problems raised centred on Local Area Planning problems which are becoming more frequent and EMC interference from non CE-conformant LED lighting, Interference from other sources, such as unlicensed transmissions and network equipment, the lack of an Irish Novice licence and power limits in the 50MHz band were raised.

The IRTS committee officers attempted to address each issue as it was raised and each item was noted for discussion on the agenda of the first meeting of the incoming committee on 13th May.

There has been an offer from Cork to host next years AGM.



*IRT & RSGB Presidents  
Gerry EI8CC and Nick G3RWF*



*Raymond Long - EI9DM*



*Roger G4NRG proudly displays his new EI call - EI8KN*



*Secretary - John EI1EM, President - Gerry EI8CC, Records  
Officer - Dave EI6AL, Vice-President - Jim EI4HH*



# Awards presented at the 2017 AGM

## Pat Conway Perpetual Memorial Trophy

For exceptional service to the Society or Amateur Radio  
**Dave O'Connor EI6AL**

## The President's Cup

Presented at the discretion of the President - for exceptional service.

**Séamus McCague EI8BP**

## Sheila Piper Cup

For service to the IRTS News Service

**Pat Fitzpatrick EI2HX**

## Kevin Freeny Trophy

For significant experimental work or innovation

**Ronnie McGrane EI9ED**

## EI3AV Perpetual Cup

Leading IRTS Affiliated Club

**Limerick Radio Club EI4LRC**

## Folan Shield

For home-constructed equipment

**Tony Breathnach EI5EM**

## Operating Awards

### IRTS DX Trophy

Leading IRTS Member in the Single Operator sections of the RSGB IOTA contest

**Mark Condon EI6JK**

### Hal Hodgins Trophy

Leading IRTS Member in the 12-hour CW section of the RSGB IOTA contest

**Joe Ryan EI7GY**

### IRTS IOTA Trophy

Leading island (EJ) DXpedition station in the RSGB IOTA contest

**Stockport Radio Society EJ0SR**

### EI7IQ National 6 Metre Shield

Leading EI/EJ IRTS member for 6 metre activity in the previous calendar year

**Tom Cocking EI4DQ**

### EI7IQ National 4 Metre Shield

Leading EI/EJ IRTS member for 4 metre activity in the previous calendar year

**Tom Cocking EI4DQ**

### Lough Ree Shield

SSB Portable Section Winter 80m Counties Contest

**Declan Horan EI9FVB/P**

### Lough Allen Shield

SSB Fixed Section Winter 80m Counties Contest

**Pat O'Connor EI9HX**

### Lough Derg Shield

SSB/CW Fixed Section Winter 80m Counties Contest

**Paul Martin EI2CA**

## Roseville Cup

SSB/CW Fixed May 40m Counties Contest

**Gerard Scannell EI5KF**

## EI5AJ Memorial Cup

SSB/CW Fixed Section Summer 80m Counties Contest

**Oleg Solovyov EI7KD**

## Pete Daly Memorial Cup

Leading station in the Open section of IRTS CW Field Day

**Gerard Scannell EI5KF/P**

## Paddy Smyth Memorial Cup

Leading station in the Restricted section of the IRTS CW Field Day

**Cork Radio Club EI1C/P**

## Paddy Daly Microphone

Leading station in the Open section of the IRTS SSB Field Day

**Cork Radio Club EI1C/P**

## Thomond Trophy

Leading station in the Open section of the IRTS VHF/UHF Field Day

**Network South Area REC EI9E/P**

## Shandon Trophy

Leading station in the Restricted section of the IRTS VHF/UHF Field Day

**Hans Kraus EI9GRB/P**

## SDR Trophy

Leading station in the 50MHz Restricted section of the IRTS VHF/UHF Field Day

**Dundalk Amateur Radio Society EI7DAR/P**

## Oriel Trophy

Leading station in the 70MHz Restricted section of the IRTS VHF/UHF Field Day

**Avondhu Radio Club EI1E/P**

## Slievenamon Shield

Leading station in the 70cm Restricted section of the IRTS VHF/UHF Field Day

**Joe Cherry EI7HIB/P**

## Tom Donnellan Cup

Top IRTS Member in the CW Single-Op section of the CQWW DX contest

**Juozas Piepalius EI3KI**

## Dermot Cowley EI2AK Memorial Cup

Leading station in the 23cm Restricted section of IRTS VHF/UHF Field Day

**John Browne EI7FAB/P**

## Ian Morris Memorial Trophy

SWL with the highest number of DXCC entities heard in the previous calendar year

**Mandy Lacey EI1627**



**AGM Awards**

Photos by

Thos EI2JD

Joe EI7GY



*Dave EI9FBB presents the 9N7EI Flag to Bill EI2CN - who worked the team on 13 band/mode slots.*

*Sean EI7CD and Aidan EI7JC at the Saturday seminars during the AGM weekend*





# Contest News

Joe Ryan EI7GY

contestmanager@irts.ie

## IRTS Contest Results

### 80m Evening Counties Contest (21st February)

The first evening IRTS counties contest was held last year, with an SSB contest in February and a CW contest in November. There was very little support for last year's CW-only event, so this year it was decided to have sections in both contests for SSB Only and Mixed Mode SSB/CW, with the added incentive of double points for CW QSOs in the mixed mode section. The response to this change was favourable, with 35 logs submitted showing QSOs with almost 50 EI and GI stations plus numerous overseas stations. Band conditions on 80 metres favoured long distance QSOs on the evening of the contest, so overseas participation was very welcome. Our next evening counties contest – also with SSB and Mixed Mode sections – is on Tuesday 14th November.

### 70cms Counties Contest (17th April)

Following a suggestion from a member, we held the society's first-ever 70cms counties contest on Easter Monday, just before the traditional 2 metres event. Support for this new contest was excellent: 60 EI or GI stations from 24 counties were active during the contest, 24 EI/GI station logs were submitted. One overseas station – on the Isle of Man – also submitted a log.

Not many stations are equipped specifically for 70cms: over 75% of QSOs were on FM, many using small dual-band handhelds. Most of the QSOs were with local stations, providing an element of 'pot luck' for contestants. QSOs came a lot easier for those of us who took to the hills for the contest, we were able to cover remarkable distances with very little power. For example, from the Slieve Blooms I worked Keith EI5KO in Donegal (a distance of 190 kms) and David EI7GEB on the Mourne (170 kms); we were all using 5W into simple vertical antennas.

Next year there will be some rule changes in response to feedback from participants. The changes currently envisaged are:

- A separate section for portable stations
- Incorporate the QSY Rule (used on the FM channels in the 2 metres contest) into the 70cms event – if only for consistency

### 2 Metres Counties Contest (17th April)

The 32 logs submitted for this contest include QSOs with 93 EI & GI stations, as well as stations in Scotland, Wales and the Isle of Man. 28 EI and GI counties were active, only Carlow, Leitrim, Longford and Waterford were absent from the logs. Not all counties had equal representation, of course: Galway and Monaghan each appeared in just one log, Wicklow was in two logs. Visitor from Belgium, Phil ON4TA, was a welcome presence on Cuilcagh Mountain in County Cavan – a rare county in our counties contests – his best DX being Hugh EI2HI in Bandon, Co. Cork, 285 kms from Cuilcagh.

### 40 Metres Counties Contest (7th May)

Local propagation on 40 metres was almost non-existent on

the day, so EI/GI to EI/GI QSOs were few and far between, being confined mainly to ground-wave contacts. 35 EI/GI stations in 21 counties were logged, but most QSOs (90%) were with overseas stations; almost 100 overseas stations were in the logs submitted. Last year this contest took place in similar conditions, whereas for the two previous years local propagation was excellent.

We have to accept that short single-band contests are particularly vulnerable to the vagaries of propagation. However, following two successive years of difficult band conditions, I have been looking at options to make the scoring of the 40 metres contests less dependant on the presence of short skip propagation. All would agree that we should retain the long-established and popular *counties* formula – in other words that EI/GI counties should be the key focus. One option is to provide that EI/GI stations would have overseas DXCC entities as well as EI/GI counties as multipliers; entrants outside EI/GI would get points only for contacts with EI/GI stations, as at present. I would like to get some feedback on this: is it a good idea, are there other suggestions?

## Field Days

Contesters have three field days to look forward to over the next few months – with CW in June, VHF/UHF in July and SSB in September. These events are ideal training opportunities for club members and also good fun. They are international events in that they coincide with similar contests in other IARU Region 1 countries, so there is always plenty of activity on the bands. The HF field day events have 24 hour and 6 hour sections. In the VHF/UHF contest we have separate sections for single-band entries on each of the five bands as well as an Open Section covering all five bands. Activity within EI for the VHF/UHF contest has tended to be low, however there are plenty of well equipped British and Continental European stations active in this contest, so a reasonable site near the south or southeast coast should provide some interesting DX. If entering the 50MHz or 70MHz sections with a view to working UK stations, note that the RSGB rules for this contest allocate specific times for these two bands, as follows:

**50MHz (6m) 14:00 to 22:00 Saturday**

**70MHz (4m) 08:00 to 14:00 Sunday**



EI7MRE/P on Slieve Carn

## Forthcoming IRTS Contests

**CW Field Day** – Saturday 3rd June 15:00 UTC (24h with 6h option)  
**VHF/UHF Field Day** – Saturday 1st July 14:00 UTC (24h)  
**2 metres Counties** – Sunday 27th August 2.00pm local time (2h)  
**SSB Field Day** – Saturday 2nd September 13:00 UTC (24h with 6h option)

## Links

Contest rules & calendar: [www.irts.ie/contests](http://www.irts.ie/contests)  
 Contest results: [www.irts.ie/results](http://www.irts.ie/results)

## IRTS Contests : Section Winners

### 80 Metres Evening Counties Contest, 21st February

SSB Only EI8CE, Aidan McGrath  
 SSB Only (outside Ireland) 2EØKVJ, Dave Boyes  
 SSB/CW EI5KF, Gerard Scannell  
 SSB/CW (outside Ireland) G3VYI, Mike Franklin

### 70cm Counties Contest, 17th April

SSB/FM High Power EI1K/P, Kerry Amateur Radio Group  
 (ops: EI7FQB EI8FHB)  
 SSB/FM High Power (outside EI) MIØRRE, Robert Rantin  
 SSB/FM Low Power EI4KN/P, Ronan Daly  
 SSB/FM Low Power (outside EI) MI/EI7GEB/P, David Morgan  
 FM Only EI4GIB, Paul Whelan

### 2 Metres Counties Contest, 17th April

SSB/FM High Power Portable EI7TRG/P, Tipperary Amateur Radio Group  
 (op: EI3ENB)  
 SSB/FM High Power Portable (outside EI) MDØMAN/P, Matty Cunningham  
 SSB/FM Low Power Portable EI4GGB/P, Owen O' Reilly  
 SSB/FM Low Power Portable (outside EI) MI/EI7GEB/P, David Morgan  
 SSB/FM High Power Fixed EI2HI, Hugh O'Donnell  
 SSB/FM High Power Fixed (outside EI) MIØRRE, Robert Rantin  
 SSB/FM Low Power Fixed EI4HH, Jim Holohan  
 FM Only EI5HBB, Eoghan Kinane

### 40 Metres Counties Contest, 7th May

SSB Only Fixed EI9JU, Gerry McLaughlin  
 SSB Only Fixed (outside EI/GI) G3PXT, Gordon Higgins  
 SSB Only Portable EI1KARG/P, Kerry Amateur Radio Group  
 (ops: EI7CQB EI9ESB)  
 SSB Only Portable (outside EI/GI) GØOIW/P, Mark Palmer  
 SSB/CW WAW Stations EI99WAW (ops: EI4BZ EI8GS)

## EI DXCC Single Band Status as at 26th May 2017

Compiled by Joe Ryan EI7GY

		160	80	40	30	20	17	15	12	10	6	2
10	EI2JD	160	80	40	30	20	17	15	12	10	6	
10	EI3IO	160	80	40	30	20	17	15	12	10	6	
10	EI7BA	160	80	40	30	20	17	15	12	10	6	
10	EI9FBB	160	80	40	30	20	17	15	12	10	6	
9	EI2GLB		80	40	30	20	17	15	12	10	6	
9	EI6IZ	160	80	40	30	20	17	15	12	10		
8	EI6FR		80	40	30	20	17	15	12	10		
8	EI7GY		80	40	30	20	17	15	12	10		
8	EI9FVB		80	40	30	20	17	15	12	10		
7	EI1DG		40	30	20	17	15	12	10			
7	EI4BZ		80	40	30	20	17	15	10			
7	EI8IU		40	30	20	17	15	12	10			
6	EI7JZ		40		20	17	15	12	10			
6	EI9HX		40		20	17	15	12	10			
5	EI4CF		40		20	17	15	10				
5	EI4GJB			20	17	15	12	10				
5	EI4HH			20	17	15	12	10				
5	EI6AL			20	17	15	12	10				
5	EI6JK		40		20	15	12	10				
5	EI8GS		80	40		20	15	10				
5	EI9E		80	40		20	15	10				
5	EI9GLB				20	17	15	12	10			
5	EI9JF		40	30	20	17	15					
4	EI3GV				20	17	15	10				
3	EI3CTB				20	15	10					
3	EI4GK				20	15	10					
3	EI4GNB				20	15	10					
3	EI5EV				20	15	10					
3	EI6FM				20	15	10					
3	EI6HB				20	15	10					
3	EI7GL		40						10	6		
3	EI9HQ				20	15	10					
2	EI2II				20		10					
2	EI5IF				20	15						
2	EI7IG				20	15						
2	EI7JN				20	15						
2	EI8IQ				20	15						
2	EI8JX				20	15						
1	EI3EBB										6	
1	EI3HA				20							
1	EI4DQ											2
1	EI5FQB				20							
1	EI5GSB				20							
1	EI6S		80									
1	EI9CJ									10		
		160	80	40	30	20	17	15	12	10	6	2



David MI/EI7GEB/P on the Mournes



Ronan EI4KN/P on Tountinna



Joe EI7GY/P on the Slieve Blooms



**Entries in Bold Type show changes since 24th February 2017**

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## Silent Key

### Paddy Smyth EI8GY



It is with deep regret that I learnt of the death of my good friend Paddy Smyth EI8GY. Paddy passed away peacefully on 24th March 2017. He had not been well for some time but he fought a brave battle in the loving care of his wife Mary and their extended family in Shannon Co Clare.

I first met Paddy more than 30 years ago, through our mutual interest in amateur radio

He was a long-time member of Limerick Radio Club (LRC) and took a very active part in Club affairs, having served on the Club committee for a number of years in the early 1990s. One of Paddy's defining characteristics was his wit and humour and he entertained us in his own particular style at many of the Club meetings over the years. Paddy was a very committed member of LRC and was always willing to contribute to the coffers of the club in time of financial need.

When I first met Paddy in the early 1980's he was working with the international company Antifyre in Limerick. His work took him to many counties in the Republic. He spent a lot of time driving from county to county meeting his customers. Because of this he had a wide knowledge of hotels and restaurant in Ireland. There were few he not been in and he was always well received throughout the length and breadth of the country. He had that natural warm friendly approach with people and you immediately experienced his wit and humour when you met him.

Because he spent so much time on the road he became quite active on 2m working mobile through various

repeaters around the country. His dulcet tones were distinctive on the air as he retained that northern lilt of his hometown of Ballynahinch Co. Down.

He was a master craftsman when it came to woodwork projects. Whenever the club would require such work to be done, Paddy was the man to call. He was involved on many visits to Tountinna with other club members whenever work needed to be done on the club repeater. I can recall many happy occasions when his sense of fun and mischief kept us entertained when we were arduously digging holes, in solid rock for our antennae on the mountaintop. He invariably had his camera to record the events on those occasions and the gallery of photos on the club web page bears testimony to this.

Paddy was a man of many parts. Both he and Mary, his wife, were members of the Shannon Musical Society. I'm not sure of Paddy's vocal capacities but he certainly was responsible for the design and building of the stage sets for many different shows, which were undertaken over the years by the society. It is a well quoted story that Paddy on his way home from these shows would arrive at Alan EI8EM QTH at some ungodly hour.... left his finger on the door-bell until Alan opened it and requested a late-night cuppa tea and a chat. They would chew the fat until late into the night.

At the Club's Annual Electronic Fair Paddy excelled at selling raffle tickets. No one got past the entrance to the Fair without being intercepted by Paddy and cajoled into buy a bunch of tickets. This was always done in a very good-humoured fashion and most attendees enjoyed the hard sell from Paddy. On a number of occasions he was assisted with the raffle by Mary, his XYL. Their presence at this year's fair was sadly missed as ticket sales were way down when compared to other years

In latter years, Paddy was not as active on the HF bands as he had been in the early days. However he checked into the local repeater from time to time. Despite his illness Paddy attended the monthly Club meetings in Limerick. He usually arrived with the "Shannon Boys" Simon 7ALB, Tom 5CA, Liam 4GB and Harry 2KL. Having been bitten by their "digital bug" he

acquired a Yaesu digital rig the FT-2DR and also a dongle, the DV4mini for his computer, to work DX the "easy way".

Throughout his life Paddy was always willing to help anyone in difficulty ... no task was too big and always carried out with a smile in the true spirit of amateur radio. I can only describe Paddy as one of God's gentlemen and I'm sure that God has rewarded him accordingly in heaven.

With Paddy's passing I have lost a good friend of many years—a friend who will be sadly missed by me and by all his friends in Limerick Radio Club.

On behalf of all the members of the club and on my own behalf I would like to offer deepest sympathy to Mary and his extended family on their very sad loss.

*Ar dheis Dé go raibh a anam dilis*

*Simon Kenny EI7ALB  
Limerick Radio Club*

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## Silent Key

### Donnacha Brosnan EI6HQ



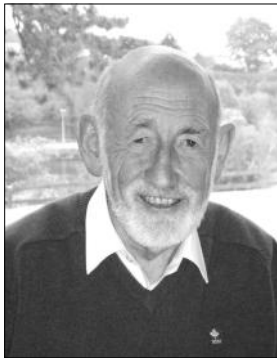
The death has occurred of Donnacha Brosnan EI6HQ, of Ragoon, Galway and formerly of Killarney Road, Castleisland. Donnacha passed away on 17th March at University Hospital Galway. He was a former member of the Kerry Amateur Radio Group. He will be sadly missed by his family and many friends.

*May he rest in peace*



## Silent Key

### Charlie Farnan EI7HG



Charlie Farnan EI7HG died on 10<sup>th</sup> March 2017 following a short illness. Charlie took up amateur radio in 1989 shortly after he retired from his job in the Office of Public Works. As an electrical engineer by profession, he had little difficulty passing the radio theory exam, sitting the exam after just a few weeks of study. He then set about studying Morse code; there were no Morse code apps available in 1989, so Charlie wrote his own Morse tutor program which he then shared with fellow members of South Dublin Radio Club.

Charlie was a keen hill walker and mountaineer, hiking the hills in Ireland and overseas for many years with his wife, Patsy. Merging his hill walking and amateur radio interests, he often brought his amateur radio equipment with him while hill walking. Along with other members of South Dublin Radio Club, he developed the concept of "Munro Day" (a Munro being a peak over 3,000 feet above sea level) when amateur radio stations were set up on some of Ireland's highest mountains. In 1995 he led an expedition of South Dublin Radio Club members to the top of Carrauntoohil, from where we successfully made contact with a number of other Munros. Charlie led similar expeditions to Brandon Mountain and the Galtees in subsequent years.

He was also an enthusiastic Worked All Ireland chaser and activator, keen to identify rare WAI squares in the most inaccessible places: in 1999, Charlie led myself, Brendan EI3GV and Eoin EI9HZ to a very boggy Cuilcagh Mountain to activate the rare WAI/WAB H02 square in Co. Fermanagh. I remember sitting with Charlie in the driving rain while we

## Silent Key

### Noel William Darker EI1488



The death has occurred of Noel William Darker (Bill) EI 1488 of Julianstown, a member of Skerries Radio Club EI2NCR. Bill was a keen Short Wave Listener for many years.

His short wave listening interest included a collection of QSL cards from many commercial radio stations.

His fellow Radio Amateurs formed a guard of honour brought him to his final resting place, under a giant Fir tree.

We extend our deepest sympathies to his wife Maureen.

*May he rest in peace*

made more than sixty contacts, swearing never again to bring a radio up a mountain without first checking the weather forecast!

Charlie Farnan was an active radio amateur in every sense of the word, and a great supporter of his local club, South Dublin Radio Club. As well as bringing us out on the hills, he was always happy to use his engineering skills to assist members with equipment and antenna problems. He was keen to help newcomers and coordinated the club's radio theory classes for many years.

Charlie was predeceased by his wife Patsy. He leaves a daughter Celine and three sons Kevin, Ian and Simon as well as many grandchildren.

*May he rest in peace*

Joe Ryan EI7GY

South Dublin Radio Club

## Silent Key

### Mike VE3AO / EI7DH



The death has occurred of Mike Ennis VE3AO/EI7DH of Scarborough, Ontario, Canada on 13<sup>th</sup> May 2017. Mike was one of the original members of the 'Irish Hour.'

*May he rest in peace*

**Echo Ireland - the Journal of IRTS**, the Irish Radio Transmitters Society, is published quarterly. The Society also publishes **EiNews** - a monthly newsletter.

Private advertisements from paid-up members are published free of charge.

Articles and event information for publication are welcomed. Send your manuscript to [newsteam@irts.ie](mailto:newsteam@irts.ie) as a word-processing file attachment, **not as a PDF**. Please do not attempt to format the document to look like a printed page. Images and illustrations should be embedded in the file *for position only*. If you do not also send your images as separate high-resolution files, they will not be used. Make sure to put captions for all images and illustrations at the end of the article, rather than embedded within the images or the main text of your article. Please include the full names and call signs of people included in photos and where necessary obtain their permission.

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## Members Ads

**For Sale:** Ameritron AL-811H Linear amp 10-160m (4-valve version) 800w P.E.P. output. New TX relays recently fitted. Can be demonstrated working in shack. €700 o.n.o. Declan [ei6fr@gofree.indigo.ie](mailto:ei6fr@gofree.indigo.ie) 086 402 7652

**For Sale:** Yaesu FT847, Modified by EI7BA, With new ATU, boxed, €1200. AOR ARD 300, 8 months old, boxed, Price €670, New cooling fan for Yaesu FT101ZD €100. Fox Tango Newsletters €100 Jimmy EI8FC 086 303 2705

**For Sale:** Icom 756 Pro2 €695 ono. Chris 087 322 3022. [ei9czb@eircom.net](mailto:ei9czb@eircom.net)

**For Sale:** Yaesu FT1000MP 80-100m in good condition €750. Brendan EI4BB 087 250 8651

## Your Society Needs You!

### Why not join our Newsteam?

The Society has vacancies for a weekly Radio News Editor, and for an Editor and members of the Production Team of our quarterly journal Echo Ireland.

If you are interested and feel you might contribute to these essential services to our members, please contact *Gerry EI8CC* or *Séamus EI8BP* to get more information.

## IRTS QSL Service Special Event Call Signs

The outwards and inwards QSL service is available free to IRTS members, whether individuals or clubs, for their own call and for special event stations licensed to them.

The service is also available free to JOTA stations, irrespective of whether an IRTS member is the licence holder. Operators of special-event stations should supply details to the relevant incoming QSL Manager.

## IRTS Shop

IRTS Members can avail of a 10% discount on purchases from the RSGB on-line shop - [rsgbshop.org](http://rsgbshop.org). Members should select the “Non-member’s Price” before placing the order and then enter the IRTS Discount Code during the checkout process. At this point the discount will be applied.

IRTS members who are also RSGB members should continue to select the “RSGB Member’s Price” and not use the IRTS Discount Code.

The IRTS Discount Code is **IRTS2020XWW**— it will change from time to time.

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**F22 2m Vertical – New €95**

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X-510N	8.3/11.7 db	€139
X-300N	6.5/9 db	€125
V-2000	2.15/6.2/8.4 db	€135
X-50N	4.5/7.2 db	€79
X-30N	3/5.5 db	€59

